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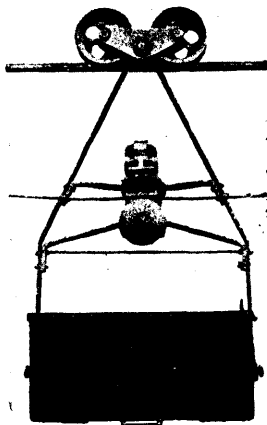
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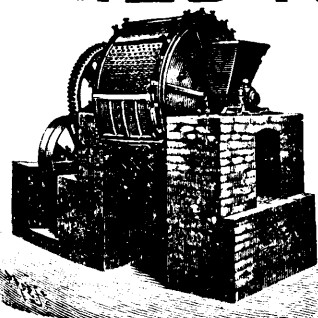
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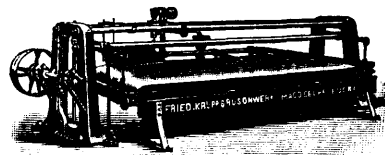
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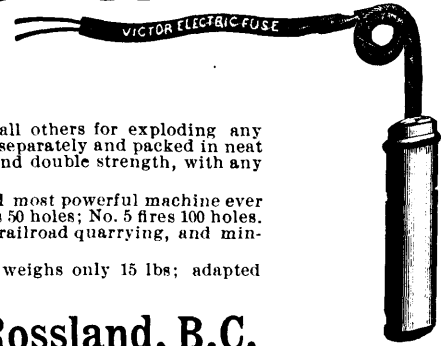
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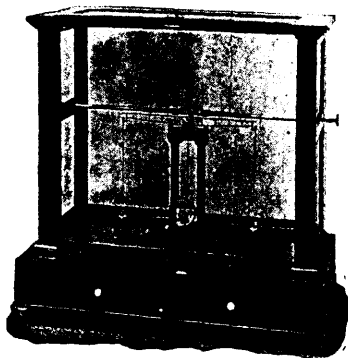
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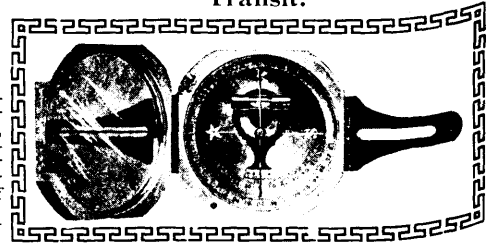
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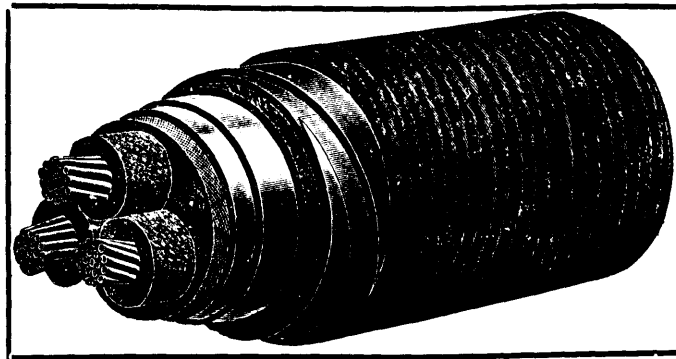
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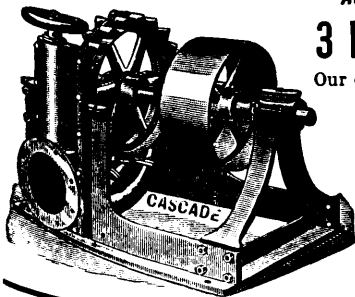
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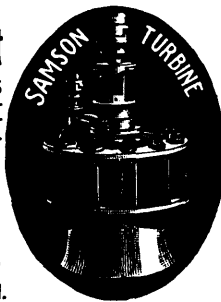


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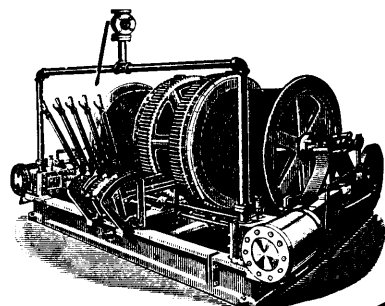
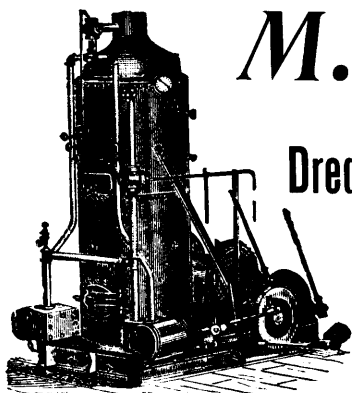
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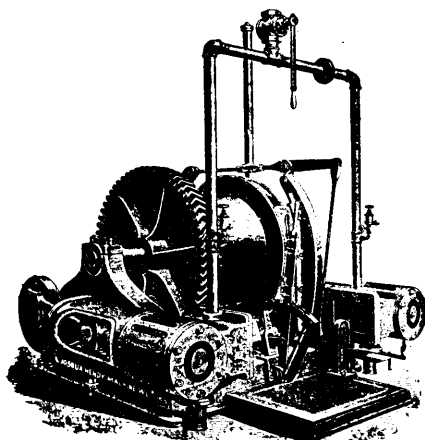
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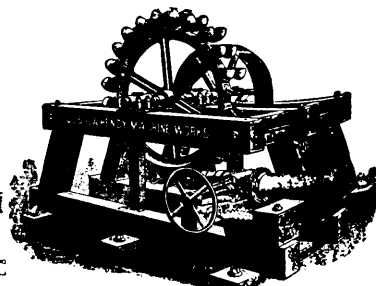
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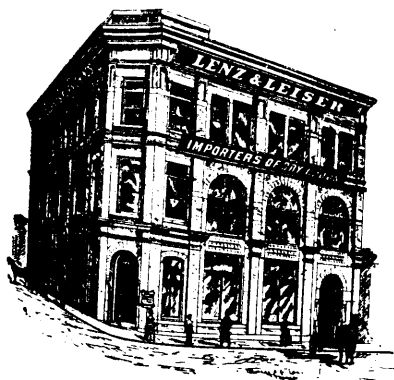
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By Command,

JAMES BAKER,

Provincial Secretary and Minister of Mines.

*Provincial Secretary's Office,
14th March, 1898.*



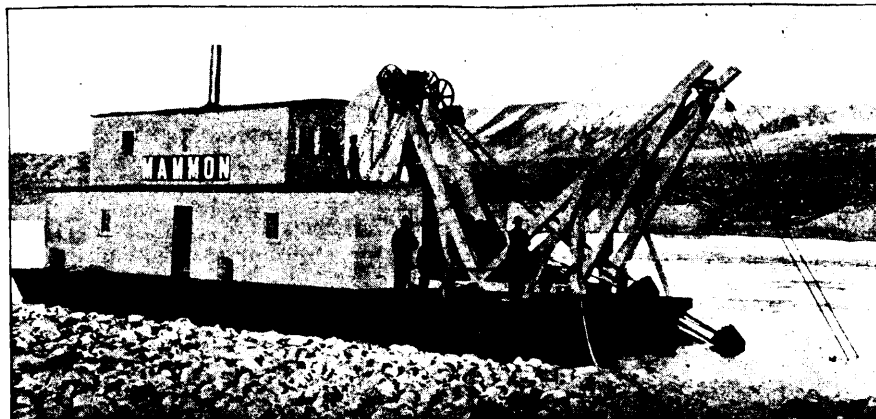
PROVINCIAL SECRETARY'S OFFICE.

HIS HONOUR the Lieutenant-Governor has been pleased
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14th March, 1898.

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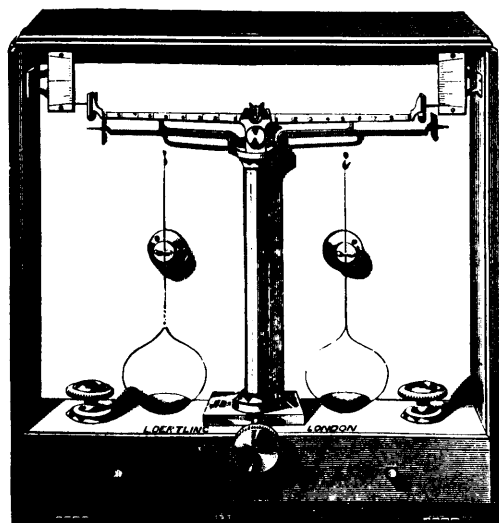
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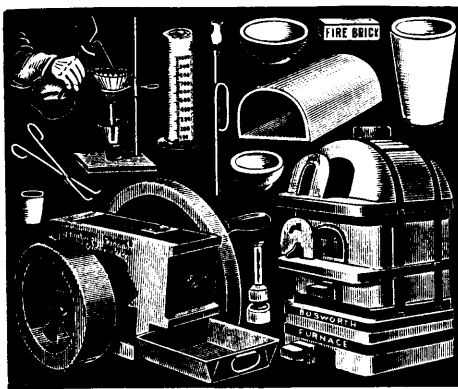
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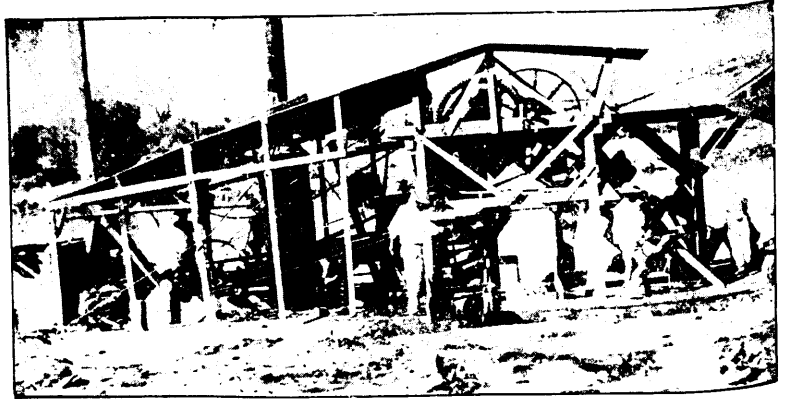
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The Mining Record.

Vol. IV.

APRIL, 1898.

No. 4

BRITISH COLUMBIA MINING RECORD.

Devoted to the Mining Interests of British Columbia.

PUBLISHED BY

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All communications relating to the business department of the British Columbia MINING RECORD to be addressed to the BUSINESS MANAGER, B.C. MINING RECORD, P.O. Drawer 57, Victoria, B.C.

THE MONTH.

THE Railway Committee of the B.C. (*i.e.* Victoria) Board of Trade oppose the granting of a charter for the extension of Mr. D. C. Corbin's railway, the Spokane Falls & Northern, into the Boundary Creek district on the grounds, first, that if this branch road is built the Boundary Creek ores will be carried out of the province for treatment, and secondly, that "by diverting trade to the south of the boundary, it would be highly detrimental to the interests of the Country."

This action of the Board of Trade Railway Committee is not only extremely ill-advised, but taking into consideration the fact that so little effort has been put forward by Victoria business men to secure either the trade or the good will of the Interior it is also an impertinence. If the Coast merchants had taken a more active part in the agitation for the construction of a direct road to South Kootenay from the Coast they might and they would have had some reasonable excuse for asking the Government to refuse Mr. Corbin's application. But as matters stand, the opposition is utterly unreasonable and the arguments advanced in the committee's report very plainly show the ignorance of those who framed it with regard to the conditions prevailing in South Yale. Any one at all acquainted with the character of the deposits in the Boundary Creek district will know that to admit of profitable treatment it will, in most cases, be a *sine qua non* that reduction works are established in the immediate neighbourhood. Very few indeed of the mines will be in a position to ship their product to outside points. But if this does not cover the objection the Government have it in their power to grant Mr. Corbin a charter on the understanding that the rate charged for carrying ore to Canadian smelters shall be no higher than the cost of carriage to those of the United States. As a matter of fact, Mr. Corbin has already signified his willingness to be bound by such a stipulation. That by the construction of Mr. Corbin's proposed road the trade of the district will flow any more than it does to-day into United States' channels is to the last degree

unlikely. At the present time quite 90 per cent. of the supplies for the Boundary Creek camps are purchased from Eastern Canadian wholesale houses whence they are shipped in bond to Marcus, because this is a more convenient point than Penticton. Will the Railway Committee of the Victoria Board of Trade have the goodness to explain why for the reason that we substitute a rail for a waggon road the existing trade conditions of South Yale are to be affected. The sudden recent show of activity on the part of the C.P.R. and of the V.V. & E.—and it is possible that between them we may see the Penticton road built this year—is at least very largely due, we venture to say to the stand Mr. Corbin has taken, and if he is allowed to build his branch line there will be still more healthy activity and healthy railway competition as well, in Boundary Creek.

It is rumoured in the City of London that the services of Mr. Wm. Ogilvie are about to be secured on a big salary, as Yukon representative of one or another of the big and well capitalized English registered mining and trading companies operating in British Columbia and the Klondike. He is certainly receiving several valuable offers from Boards of Directors who recognize the business value of his name and services as fully as did the British America Corporation the worth of Provincial Mineralogist Carlyle, as an advisory representative in British Columbia. Judging also by the remarks which he has freely made, Mr. Ogilvie will, if the Mann-Mackenzie railroad agreement should successfully run the gauntlet of keen opposition in the Senate, be found an active aide of Mr. Wm. Mackenzie in his endeavour to secure a big subscription of British Columbia capital in return for stock in the combined Yukon railroad and mining undertaking. Mr. Ogilvie is clearly "bent on business" in the matter, with the full approval of the Dominion Government. The fate of the much debated railroad agreement will, however, in all probability be settled ere these lines appear in print.

Up to the time of going to press no decision has been reached by the Railway Committee at Ottawa with regard to Mr. Corbin's application, but it is announced that the matter will be finally decided by the 1st of April.

At the annual meeting of the Federated Institute of Mining Engineers in Montreal, early in March, the important question of the possibilities of British Columbia smelting and refining enterprise arose for discussion, and opinion was unanimous that immediate legislative action was required to assist in the building up and conservation of the industry for Canadians. The discussion culminated in the adoption of the following resolution:

"That a committee be appointed to draft and present to the Dominion Parliament and other proper channels, a petition setting forth as being the sense of this Institute, representing as it does the mining and kindred industries of Canada, the desirability of an efficient import tariff on lead and lead manufactures by the Canadian Government."

Lead Smelting in Kootenay.

This resolution comes at an exceedingly opportune moment. The support of so influential a body as the Federated Institute, will necessarily lend additional weight to the petitions that have been addressed to the Government during the month by Slocan mine-owners in which relief is asked on similar lines. The situation at present is such that not only are many of the silver-lead mines of Ainsworth and other camps where the ore-values are good but not high enough to stand the heavy freight and smelting charges to which they are now subject when treated in the United States, are closed down, but owing to the United States tariff the duty on bullion is considerably higher than on the crude ore, so it is impossible to operate local smelters. On this subject a prominent officer of one of the West Kootenay smelters writes to the MINING RECORD, placing the matter in a very clear light.

"In order," he says, "to make possible the smelting of our silver-lead ores at home it is first necessary to preserve the Canadian raw and manufactured lead market for Canadian lead by increasing the import duty on pig lead and on manufactured lead products, such as white lead, sheet lead, lead pipe, shot, glass, etc. The increase of the import duties on the above mentioned commodities would result in all lead mined in Canada being smelted, refined and manufactured here, and much benefit would accrue to the eastern provinces, where all or a part at least of the raw lead would be manufactured, as well as to this province where most of the lead would be mined, smelted and refined. The consumption in Canada annually of lead in various forms is about 25,000 tons, which is more than the yearly output of Canadian mines will probably amount to for several years to come. The manufacturing at home of the lead produced in Canada would furnish employment for several thousand people.

About 7,500 tons of pig lead are imported yearly, most of which comes from Mexico. That country having the advantage of cheap water transportation to Montreal, together with cheap labour for mining and smelting at home can therefore, with the present import duty of fifteen per cent. (about half a cent per pound) on pig lead, supply the Canadian market to the exclusion of British Columbia lead, thus forcing our product to seek a market in the United States, where it is more profitable to send it in the form of ores than in the form of base bullion or pigs on account of discriminating duties imposed by the United States. With the lead in ores paying one and a half cents per pound and the lead in bullion or pigs two and one-eighth cents per pound for duty, it can readily be seen that this discrimination in duties will accomplish, what it was intended it should accomplish, viz.: that all lead imported to the United States be shipped in ores and smelted there.

The duty on dry white and red lead and zinc white, imported to Canada, is only five per cent., thus leaving Canada practically a free market to the voracious lead trust of the United States, for their products. I can say without fear of successful refutation that from a metallurgical standpoint there is absolutely no impediment to the economical smelting and refining of lead ores in Kootenay. The only condition lacking for the successful operation of lead smelters in British Columbia, is the saving of the Canadian market for Canadian lead.

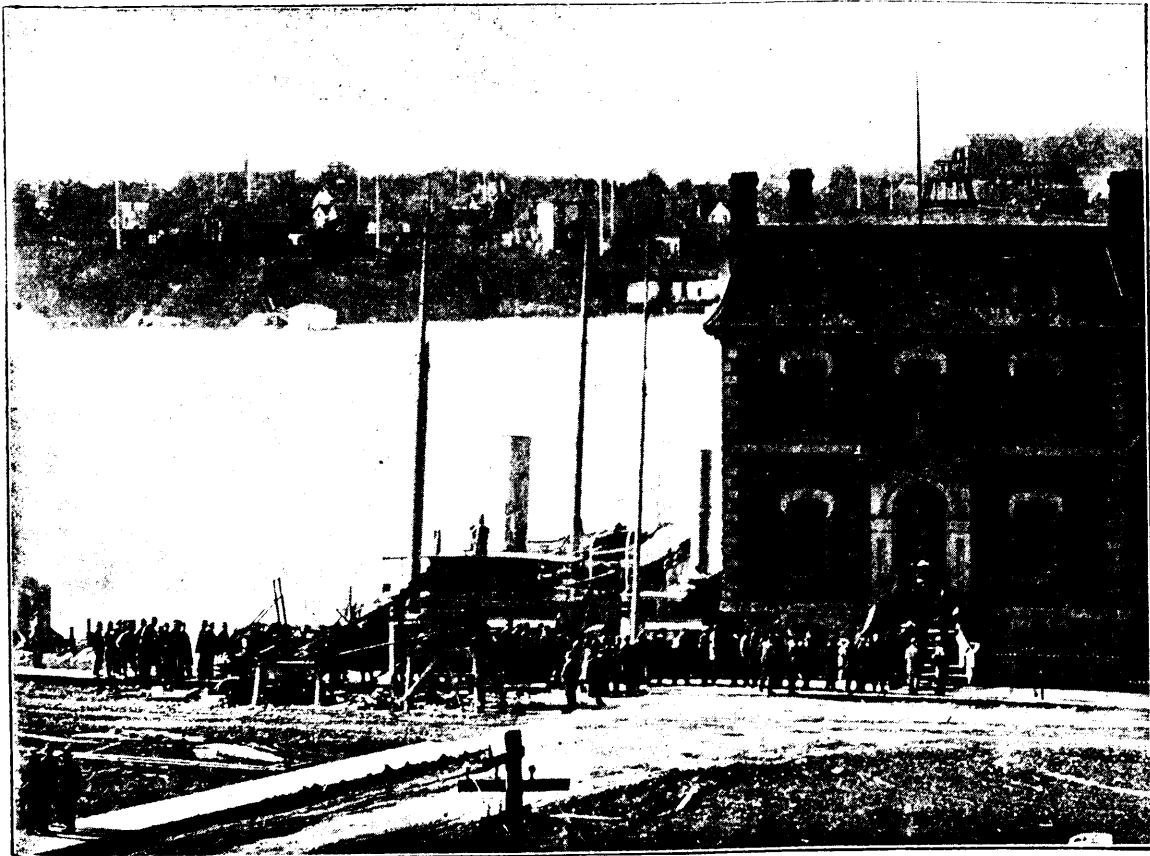
It is to be hoped that steps will be taken by the Government before the prorogation of Parliament, to foster the lead mining and smelting industries of the Province. That the case is urgent is evidenced by the fact that a number of developed mines in Kootenay have, within the past thirty days suspended operations for the reason that the duties collected by the United States left no margin of profit to shippers."

We have since received a circular letter headed "A Solution to the Smelting Problem," from Mr. D. W. King, editor of the Kaslo paper, the *Kootenainian*, who has during the past month taken a very active part in agitating the question in the interests of the Slocan mining and smelting industries. Mr. King's arguments are very similar to those advanced by our correspondent, and doubtless his information was obtained from the same source. Meanwhile petitions are being widely circulated throughout the country asking the Government to place an adequately high import duty on pig and manufactured lead to shut out foreign competition, and the suggestion is receiving the endorsement of the Provincial Boards of Trade and other official bodies. Both our correspondent and Mr. King have, however, we think, made a mistake in estimating the amount of lead consumed in Canada, which they both place at approximately 25,000 tons. According to the latest official returns published by the Department of Trade and Commerce, in a summary statement of imports during the fiscal year ending June 30th, 1897, the total lead and manufactures of lead amounted to rather more than 7,500 tons. Our correspondent evidently fell into the error of including in his calculations the "tea lead" importations, which do not affect the situation one way or another. If, therefore, the home consumption does not exceed at the most forty per cent. of the output of the mines—and the present output is rapidly increasing—a market would have to be found for the surplus, and even to suggest where a profitable market could be secured is in itself a difficult task. The United States would not be open to us on account of prohibitive duties on bullion and manufactured lead. Pig lead could, perhaps, be shipped to England as ballast round the Horn, but the length of the journey, and the time thus occupied are serious objections; while our manufactured article, as white lead, would necessarily be brought into keen competition on the English market with the product of old established factories, where cost of production has been reduced to a minimum. There has been some mention, also, of Chili, Japan and China, but it must not be forgotten that Australia has not succeeded in finding a market for her lead in any of these countries. These are obstacles. We do not maintain that they are insurmountable, but we mention them to show that the problem of local smelting in Kootenay is beset with many complex questions which cannot be disregarded. Then, again, in the consideration of these demands on the part of provincial lead miners and industrialists the Government will, of course, be called upon to determine the effects such a change of the tariff as proposed would have on the Canadian lead market, and to what extent other industries would be influenced thereby. In British Columbia, for instance, the largest importers of pig and scrap lead are the fish and fruit canners. The condition of the salmon canning trade is such that it could stand no additional burden, and

if the Canadian import duty on lead is raised from 15 per cent. as at present, to 2½ cents per pound, which is the tariff imposition of the United States on this commodity according to the readjustment under the Dingley Bill, the price of lead to local consumers would rise from a little over three to nearly five cents per pound. In the canning trade about five eighths of a pound of lead is used in the soldering of a sufficient number of cans to fill one case, and the increased cost of lead would therefore add about one cent to the expense of preparing a case of tinned salmon for the market. This difference, we are informed, however, by the representative of the largest canning firms in the country, defines the limit between profit and loss; and canners esteem themselves very fortunate if they realize as large a profit as one cent on every case exported.

sideration should not be forgotten by those who are agitating the cause of lead smelting in British Columbia

There can be no question but that any scheme, the object of which is to promote the profitable smelting of lead ores within the Province will receive the active support and sympathy of the C.P.R. The great railway corporation has everything to gain and nothing to lose by backing up the Slocan smelter men in their endeavours to accomplish this purpose. If lead smelters are operated in West Kootenay, refineries, factories and corrodng works will necessarily, owing to the conditions of the labour market, be established in Eastern Canada, and the haulage of both the raw and manufactured products over the Canadian Pacific line will swell not inconsiderably the company's traffic receipts. Moreover, the company do not fail to recognise that



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(From a photo by Messrs Fleming Bros., of Victoria.)

Again, take the case of paint manufacturers. Under the present tariff conditions it is possible for Canadian representatives of this trade to import dry white leads and successfully hold the market against foreign competition. But if the import duty on the lead commodities required in the manufacture of mixed paint is increased, it is questionable whether this Canadian industry would survive. The Government will consequently be obliged to consider other interests besides those of provincial lead smelting and mining. With regard to the canning trade, the difficulty, of course, could be overcome by allowing a rebate on the lead used in the preparation of the cans afterwards shipped to foreign markets, as was done some years ago, but that it will be necessary to take all these matters of commercial moment into serious con-

sideration. an increased activity in Slocan mining means a general prosperity whereof the railway would naturally experience the beneficial results, and the operation of a number of smelters would afford a lucrative market for the coke from the Crow's Nest coal fields owned by the Company. That the American roads would not permit the C.P.R. to have things all its own way may of course be pre-supposed, and there would be healthy competition enough to keep both transportation and smelting charges within reasonable bounds. The Canadian railway would nevertheless have a decided advantage in competition with rival lines. In conclusion, it may be said that if sufficiently convincing argument—and this should not be a difficult task—is brought forward to demonstrate the fact that a prohibitive import duty placed on pig and manufac

tured lead would be not only in the interests of British Columbia, but of the whole of Canada, to gain Eastern commercial support, with this, therefore, the powerful influence of the C.P.R., and the endorsement of the mining community of the Dominion, the present agitation should result in legislative action on the part of the Government along the lines suggested.

The Tax on Working Miners. For the fifth time since 1892 the motion introduced by Mr. Cotton, the junior member for Vancouver City, to abolish the tax of five dollars imposed on metalliferous mine workers has been voted upon and negatived in the Provincial Legislature. While the Government may admit that the incidence of this tax is unjust, the reasons given for not repealing the law are first that the Kootenay miners themselves have petitioned against the adoption of such a course, and secondly, that by the imposition of this tax an opportunity is afforded of compelling the Chinese to contribute to the revenue of the country. We are not told what proportion of the Kootenay miners evince this apparent anxiety to pay back part of their earnings into the coffers of the provincial treasury, but it could no doubt be shown that a very large number of the petitioners do not follow actual mining the year round as a means of subsistence, spending, probably, the greater part of their time in the hills as prospectors, and merely securing mine employment in the winter months to provide necessary funds for the next season's exploratory work. Men of this class would, in the ordinary course of things, be obliged to obtain miners' licenses, and a change in the present law would not affect their interests in any case. This does not, we admit, explain the action of the Government's petitioners, and it must be confessed that it is a very difficult matter to conceive of a possible explanation, except on the grounds that the matter of the remission of the tax is imperfectly understood. One can readily comprehend that prospectors as a body might have had cause for objecting to the abolition of the license, which conveys certain privileges and protective rights to the holder, but that a miner who is not a prospector should be obliged to pay the same tax because circumstances have made him a gold-miner, and he therefore follows this occupation, instead of another, for a living, is obviously unfair. It is the duty of every workingman in the province to protest at the treatment accorded Mr. Cotton's motion. Regarding the contention that by means of this tax the Government make Chinese contribute to the revenue, Mr. Cotton's paper, the *News-Advertiser*, makes the mistake of asserting that this "is simply a shuffle," because "Chinese do not work in the mines in Kootenay." While Chinese are not employed, it is true, in this capacity in Kootenay, Mongolian labour is largely engaged in Cariboo in connection with surface work on the big hydraulic properties in that district, where their work is both efficient and cheaply done. It may even be questioned if the assistance of the Mongolian labourer could be dispensed with in this class of Cariboo mining at the present time, and we have been assured by reliable engineers in that district that it would be impossible to get efficient white labour instead of Mongolian and at the same time to carry on operations at a profit. The Government, therefore, does derive a revenue from Chinese gold mine workers, but this does not affect the argument. If it is justifiable to tax the Chinese gold miner, why are not workers in other callings taxed? While, of

course, there is now no likelihood of amending the law in this respect during the present session, the matter must not be allowed to rest, and we hope to see Mr. Cotton's persistence rewarded by the abolition of this tax when next the attention of the Government is drawn in the Legislature to its injustice.

Mr. Kellie's Truck Act. The disgraceful state of affairs at Le Roi mine, Rossland, the employees being compelled to "board" *volens volens* at the Company's houses, and pay through the nose for the, if not actually poor, at

least by no means first-class fare provided, was graphically described by a correspondent in the *MINING RECORD* last month, and the same tale is told in this issue by a miner employed in Le Roi, who gives us permission to publish his name in full instead of the *nom de plume* with which his letter is signed, if we consider it advisable to do so. We, however, have allowed the letter to appear anonymously, because, while its significance will be in little wise affected on this account, the publication of our correspondent's name would perhaps be prejudicial to his interests as a workingman in the Rossland camp. Apart from the issue itself, a matter which in connection with these letters appears to be worthy of comment, is that the abuse complained of should have been so long tolerated, and that until now, seemingly, no voice has been raised in protest or criticism. The *suaviter in modo* but *fortiter in re* may be regarded as commendably characteristic of Trade Unionism in British Columbia, and as in the case in point relief is sought not by resorting to strikes and lock-outs, but by appealing to legislation of the country. Mr. Kellie's "Truck Act," which has already passed its first reading, was brought down by him in accordance with the promise to the Rossland Trades & Labour Council, and under its provisions it will be difficult for any Company such as the Le Roi to dictate to the employees where or how they shall "board," or spend the money which they shall justly earn. In the particular case of Le Roi, the conduct of the management is especially reprehensible. The owners are principally Americans, whose wealth is due to the successful working of this Rossland mine, but not content with the handsome monthly profits derived therefrom, they attempt to increase them by grinding the face of the working miner. It is said, perhaps truly, that Kootenay owes much to the enterprise of the Americans, but if many American owners of B.C. mines imitate the example of Le Roi Company, British Columbians will very soon have reason to consider that the debt has been repaid in addition to an usurious rate of interest thereon.

FROM THE EDITOR'S NOTE BOOK.

IT is rather strange that the practice of leasing mining property is so little followed in British Columbia. In fact we only know of one instance of a claim having been worked on this plan in the Province, but the results here proved so satisfactory to both owners and lease holders that it is a wonder the example has not been emulated. The reason, of course, is to be found in the fact that the prospector argues on the basis that a bird in the hand is worth two in the bush, and he generally prefers to part with his claim for a comparatively small sum in cash rather than take chances upon its proving a paying mine after development by the shareholders, when he would earn his royalties and at the expiration of the lease come into a valu-

able property. That is the condition of things now, but it is very likely that when more is definitely known of the country and its formalities leasing will become as common in British Columbia as it is in, for instance, Colorado.

A correspondent sends us a very extraordinary account of how matters are carried on in connection with a certain Boundary Creek Mining Company, incorporated some eighteen months ago. It appears that a certain prospector, whom for the sake of convenience we shall designate as "A," promoted a company to take over a number of claims of which he was the owner, adjacent to the town of Greenwood. Shares were placed in the market at 10 cents, and a large number were subscribed for at this price, not only locally, but by investors in Eastern Canada and Great Britain. As the claims were regarded in the neighbourhood as promising, and the company being short of funds, miners were found who were willing to work in exchange for shares and board. Not only miners, but other mechanics received payment for services rendered in this way. Here was a foolish mistake, or rather a culpable disregard on the part of the management for the interest of purchasers of shares, for directly, of course, these miners became "hard-up;" they sold their shares for ready money at whatever price was offered, and the stock consequently depreciated at once. This custom, although deplorable is, however, common enough with newly organized companies having limited cash capital at command, and our correspondent does not dwell on this point. He goes on to say that at a recent meeting of the shareholders of the company the directors reported that they had acted with regard to a question that had arisen in a certain manner. The course adopted by them met with the approval of all present with the exception of the gentleman we have called "A," who was represented by solicitor. "A" demanded a vote and it was found that if every share was represented he would still hold a very large majority of the votes. The meeting then abruptly terminated.

"A" subsequently nominated and elected friends of his own to act as directors, and intends we understand, to institute legal proceedings for the purpose of nullifying the action of which he disapproved taken by the former Board. It is furthermore rumored that this gentleman is arranging for the sale of the company's properties to a Canadian syndicate, and if these negotiations are successfully consummated the present shareholders will receive certainly not more than one cent per share, or in other words they lose ninety per cent. on their investment while "A" will have, naturally, every reason to be satisfied with his *coup*. We, of course, do not vouch for the correctness of this story, but if there is no provision in the provincial company laws as there is in the English statutes, to disallow a vendor retaining more than one-third of the shares in a company at the time it is incorporated, the sooner legislation is introduced on these lines the better.

The very satisfactory news that the War Eagle Mining Company, of Rossland, has entered into an agreement to ship 100 tons of ore daily to the Trail smelter for treatment tends to confirm the views we expressed last month on the subject of the transfer of Mr. Heinze's interests in this district to the C. P. R. Even at the reduced charges for treatment and transportation of \$7.50 per ton — a reduction of \$3.50 or

nearly forty per cent. by-the-way — the C. P. R. may operate the smelter at a profit, for although it is announced that the company intend to charge no higher for the treatment of the ores of the Roseland mines than the actual cost of the work, it must be also remembered that gold is purchased by the smelter on the basis of 95 per cent. of the assay value of the ore, and under the direction of skilful management certainly a more considerable percentage than this is saved.

Of late several promising silver-lead claims in the Slocan have been acquired by English companies and the very best results may be expected from the development of these properties if the Old Country shareholder will be content to wait a reasonable time for dividends. But it is a well-established fact that your British investor is greedy in this respect, and he very naturally perhaps wants a return upon his investment as speedily as possible.

Already, we are informed, London shareholders in companies owning embryo mines in South Kootenay from which a few profitable shipments of ore have been made, are asking why dividends have not been declared, and they become very indignant when informed that conditions hardly justify such a course. Nevertheless it is obvious that to declare a dividend, when a mine is in the first stages of development is both unwise and misleading, and the careful policy of the local management of the companies in question who are applying the profits accruing from the ore shipments to the further exploitation and development of the mines themselves is to be very highly commended.

The managers of the New Westminster Agricultural & Industrial Exhibition, who propose this year to make their Fair international in its scope, and thus representative of Pacific Coast interests generally, have before them a special opportunity, of which it is to be hoped they will make the most. They can, as a big feature of their show, this autumn, gather together a fine exhibit of mineral products, machinery and appliances, and as British Columbia will, later in the year, attract a host of visitors from Eastern Canada, the States and the United Kingdom, and also probably find within her borders many returning travellers from the Yukon, this feature of the Fair should widely advertise our Province's mining possibilities.

Now that Bridge River of Lillooet is on the eve of becoming an important gold mining district, there is much to support the request of residents and others interested in Bridge River for the appointment of a local mining recorder. This will greatly convenience the people of the district, as many points on Bridge River are at a considerable distance from Lillooet, the present recording centre.

The people of the Pacific States are inducing the American Government to make rather tardy but apparently vigorous efforts to find something like an all-American route to Dawson. This, Capt. Abercrombie, a man who some years since explored a large part of Alaska for the United States Government, thinks may be found via Valdes Pass and the Copper River country. He claims that Dawson can thus be reached from the Northern Alaska coast by a comparatively short journey of 385 miles, but from his description

the intervening country seems to be exceptionally difficult and dangerous to travel. The latter portion of this suggested all-American route would of course make through Canadian territory, but three-fourths of the road would traverse the barren lands of Alaska. It may be taken at any rate for granted that nothing much will come of the Valdes Pass proposal during 1898, as it will probably take the Americans all summer to investigate its facilities.

Mr. Wm. Selover, now described as "late of Portland, Oregon," is still peddling round his Pacific Coast smelter project. He claims to have got some sort of an offer from the people of Fairhaven, but this is unlikely to amount to much as that boom townlet has long been in an almost moribund state. Mr. Selover is, however, using an alleged Fairhaven offer "pour encourager les autres" in Seattle and, if possible, secure gratis, or almost gratis, from people in that city a valuable site for a four-hundred-ton smelter. Mr. Selover himself doesn't amount to much and he failed before to "enthuse" the shrewd citizens of Seattle. He, however, hopes for better luck now, as the Yukon boom is on, and he claims that Chicago capitalists are ready to support his venture, if only the men of Seattle will rise sufficiently to the occasion. "I don't ask for stock subscriptions from Seattle," says Mr. Selover. "I only want a site for nothing or next to nothing." This, however, means a call for a big gift in kind of big value and it is doubtful if the men of Seattle have sufficient confidence in Mr. Selover to make it. Meanwhile, why are the smelter opportunities of one or other of our own Coast and Island cities so slow to be taken by outside capitalists?

It is becoming regrettably clear that the Imperial Institute in London is a failure in the sense that it has not accomplished the purpose for which it was intended. This fact has already been recognized in Australia, and the Institute management has been intimated officially of the intention of the Government of Victoria to discontinue its contributions, and that this example will be followed by the other Colonies, is not at all unlikely. Several reasons have contributed towards this deplorable state of affairs. In the first place the site, so far away from the haunts of the business man, at South Kensington, was a most unfortunate choice, and since both the plan of operation and the management have been deservedly criticized, and for some time past Colonists have been asking themselves what good end was served in affording the means for the support of an institution which was merely used as a sort of fashionable stamping-ground where ladies had the opportunity of admiring one another's costumes, or of exchanging ideas upon the latest social sensation, while the Continental bands discourse sweet music.

As to the Canadian department, we are informed by a gentleman recently returned to the Province from London, that no situation in the building could be more unfavourable, and the exhibits are so badly arranged in most instances that it would have been almost better had they never been sent at all. The fault of the arrangement, or rather the want of it, may properly perhaps be placed to the charge of the official representatives of the Dominion and Provincial Governments in England, but this does not mend matters even though there is a real satisfaction in finding a scapegoat with so little difficulty. It is a pity to see an idea which in itself was good, result in

fiasco because imperfectly carried out, and it is still to be hoped that "something may be done" to prevent the Imperial Institute from falling into "innocuous desuetude," to borrow a phrase from Mr. Cleveland. But meanwhile it is of very great importance that British Columbia should be well advertised in London—in the city itself.

As a step in this direction we would suggest to the Government the advisability of distributing the reports of the Minister of Mines free of charge — besides supplying copies of these to the public libraries of all the larger towns in Great Britain—among the leading brokers of the London, Liverpool and Glasgow stock exchanges. But the work of advertising the resources of the Province should not be allowed to fall entirely on the Government, whose efforts might be very materially assisted by prominent provincial mercantile firms having correspondents in England to whom, for instance, photographs and collections of ore specimens for exhibition purposes might be advantageously sent.

An end has not been made of the Klondike "wild-cat" even yet, but then there are many varieties of the breed. One of the latest of these very palpable swindles bears the name of the "Klondike Gold Syndicate." From the prospectus it is gathered that the syndicate besides "guaranteeing" 20 per cent. interest on every £1 share which will, very possibly, be worth "£100 each before the end of the year," offer a free pass to the gold-fields for every £100 subscribed. Was there ever such a chance to become rich quickly, not to mention the luxury of travelling without expense before you come into your fortune? The secretary of this philanthropic concern generously offers 10 per cent. to those able to induce their friends to buy shares.

A correspondent informs us that the new Huntington mill at Fire Mountain is said to be "doing so badly" that the company contemplate "replacing it by stamps." He remarks that "whether this is a true explanation or whether the management is ashamed to publish the results of the milling is not known by the general public."

In view of the fact that in no boom prospectus yet issued has the allurement been omitted in the describing of an embryo mine that its "ore body promises to increase in value with depth," the Provincial mineralogist's emphatic statement in his recently published report on the Rossland camp, that at least here there is proof positive to the contrary will be a rather nasty blow to promoters of a certain class. Mr. Carlyle is not the first mining engineer of high standing to point out how baseless is this contention in the face of actual experiment or from a scientific standpoint. But the fact that the Rossland ore bodies and therefore those of other localities where the formation and mineralogical conditions are identical do not improve in value as depth is attained has been thus officially denied, will necessarily attract more attention to the denial, and perhaps hereafter the public will place less credence in promoter's doubtful assertions in this particular.

Mr. McConnell, the recently appointed Provincial mineralogist, is expected to arrive from Ottawa, to assume his new duties on the 1st of May.

REVIEW OF THE REPORT
OF THE
MINISTER OF MINES FOR 1897.

NO better mode of advertising the mineral resources of the Province could be devised than by the wide circulation of the Report of the Minister of Mines for the year ending December 31st, 1897, the compilation of which reflects the highest possible credit on Mr. Carlyle, the Provincial Mineralogist, whose careful and accurate work will necessarily give this report an immensely influential value and cultivate to an important degree the favourable estimate that is beginning to be formed among investing circles abroad of British Columbia's great potentialities. Published at a time when public attention has been forcibly drawn to the country through the rich discoveries in the Yukon Gold Fields, the report will have the further effect of stimulating awakened interest in the mines of the Province, and, perhaps, induce many who have determined to tempt fortune in the far north to abandon their project for one affording less risk and offering at least surer returns without the concomitant discomfort and hardship in the mining districts of the Kootenays and northern British Columbia. Thanks to the provisions in the clauses of the "Inspection of Metalliferous Mines Act," passed last session, obliging mine owners to furnish the Department, not later than the 15th of January, with a detailed statement of production for the year, Mr. Carlyle has been able to present "almost perfect" returns for the year 1897, and at an earlier date than statistical statements may be

generally expected. Indeed, we believe that in no other country in the world is official mining information of this nature so promptly published.

MINERAL STATISTICS.

In the tables showing the production of lode mines, the method adopted is to compile the data from the smelter returns received during the year, hence the apparent variance between the figures published by the department and those given in the mining press of the ore exports from returns of the customs offices. For instance, on shipments late in December from several Slocan mines smelter returns have not yet been made, and consequently these will appear in the report for 1898.

The first portion of the report is taken up with statistical tables of production, table I placing the total value of the production of British Columbia mines, metalliferous, coal and building material, for all years to 1898 at \$112,413,485. But Table II is even more interesting, as comparing the rate of increase of the past seven years, and showing particularly the marked increase during 1897. This table, with numbers III and VI are well worth reproducing :

TABLE II.

Production for Each Year from 1890 to 1897 (inclusive.)

Year.	Amount.	Yearly Increase.
1890.....	\$ 2,608,803.....	
1891.....	3,521,102.....	35 Per Cent.
1892.....	2,978,530.....	
1893.....	3,588,413.....	21 Per Cent.
1894.....	4,225,717.....	18 Per Cent.
1895.....	5,643,042.....	33 Per Cent.
1896.....	7,507,956.....	34 Per Cent.
1897.....	10,455,268.....	40 Per Cent.

TABLE III.

Amount and Value of Materials Produced 1896 and 1897.

	Customary Measures.	1896.		1897.	
		Quantity.	Value.	Quantity.	Value.
		Ounces.....	27,201	\$ 544,026	25,676
".....	62,259	1,244,180	106,141	2,122,820	
".....	3,135,343	2,100,689	5,472,971	3,272,836	
Pounds.....	3,818,556	190,926	5,325,180	266,258	
".....	24,191,977	721,384	38,841,135	1,390,517	
Tons, 2240 lbs.	894,8.2	2,688,666	882,854	2,648,562	
".....	615	3,075	17,832	89,155	
".....		15,000		151,600	
		\$ 7,507,946		\$10,455,268	

TABLE VI.

Production of Lode Mines.

Year.	Gold.		Silver.		Lead.		Copper.		Total Value .
	Oz.	Value.	Oz.	Value.	Pounds.	Value.	Pounds.	Value.	
1887.....									
1888.....			17,690	\$ 17,331	204,800	\$ 9,216			\$ 26,547
1889.....			79,780	75,000	674,500	29,813			104,813
1890.....			53,192	47,873	165,100	6,498			54,371
1891.....			70,427	73,948	Nil.	Nil.			73,948
1892.....			4,500	4,000	Nil.	Nil.			4,000
1893.....			77,160	66,935	808,420	33,064			99,999
1894.....	1,170	\$ 23,404	227,000	195,000	2,135,025	78,996			297,400
1895.....	6,252	125,014	746,379	470,219	5,662,523	169,875	324,680	\$ 16,234	781,342
1896.....	39,264	785,271	1,496,522	977,229	16,475,464	532,255	952,840	47,642	2,342,397
1897.....	62,259	1,244,180	3,135,343	2,100,689	24,199,977	721,384	3,818,556	190,926	4,257,179
	106,141	2,122,820	5,472,971	3,272,836	38,841,135	1,390,517	5,325,180	266,258	7,052,431
	215,086	\$4,300,689	11,380,964	\$7,301,060	89,166,942	\$2,971,618	10,421,256	\$521,060	\$15,094,427

During 1897 there was a slight decrease in the coal production, but the output of coke increased from 1,565 tons during 1895-96 to 17,831 tons for 1897.

On the above published statistics Mr. Carlyle comments as follows:

THE PROGRESS OF MINING.

"Figures speak for themselves, and the statistical tables just given show very clearly the steady but gratifying growth of the mining industry in this Province.

The results are so far not startling or phenomenal, but the increase of the output of the lode mines from \$100,000 in 1892 to \$7,050,000 in 1897, or five years, with an increase of \$2,750,000, or 65 per cent. during the past year, commands attention.

That 1898 will see a substantial increase is now assured from the amount of ore now in sight in the different districts, and from the fact that the amount of customs returns for shipments of ore for January, 1898, were \$1,193,458 as compared with \$675,506 in 1897 (these shipments from West Kootenay only).

The increase in the amount of gold (lode) was 43,882 ounces, or 70 per cent.; of silver, 2,337,682 ounces, or 75 per cent.; of lead, 14,641,158 pounds, or 65 per cent.; of copper, 1,506,624 pounds, or 40 per cent.

[CAPITAL.

The interest of capital in the mineral resources of the Province has been aroused to a degree quite commensurate with what the mining regions are now prepared to show or offer, and in Great Britain a large amount of money is now ready to be sent here, provided good, business-like propositions can be presented. Not only are gold properties now greatly in demand, but also silver and copper, as the money-making possibilities of the high grade silver ores, as found in the Slocan, Ainsworth and other camps, are acknowledged by investors, but often ignored by speculators, who wish to cater to the public's taste for gold.

Such interest has been aroused that any district or property that can offer good inducements to investment will be examined and favourably considered, and when such a condition of affairs is reached, it then remains with the mining men to open up and prepare their claims for inspection.

MINING COMPANIES.

During the early part of the year, pending the enactment of the new Company's Act with more stringent regulations, a great many mining companies were registered with a capitalization that savoured of the ridiculous, but the payment of \$50 or \$100 for the licence on July 1st was more than a great many of these corporations could stand, and they ceased to exist.

A good many companies, organized solely to make money by the sale of stock, as the public was then worked up to such a pitch as to be willing to buy almost anything offered, have suspended with no assets, as they never possessed anything except bonds or options on property or unworked locations.

However, strong companies, and the number is increasing, have been purchasing both "prospects" and developed properties of mines, and mining operations are becoming more extensive, and more thorough and substantial work is being done.

For the public in buying mining stocks, it must be very difficult to decide what to choose. In many cases a company is judged by the personnel of its directorate, by no means a sure and safe way, or else by the most tempting offerings in the prospectus of large and speedy dividends, according to the high values in large bodies of ore stated to exist on the properties of the company. The public buys this stock either with the hope of selling out on a rise, so many times engendered by skillful machinations, or for investment, and the offers of a company, if very brilliant and enticing, can often be correctly judged by the query that if these mines are so rich as claimed, why do the promoters wish to divide up such a good thing with anyone who will buy the stock.

To the public at large it may be well to state in reference to the mining resources of this Province, that they now promise to become yearly more valuable, that British Columbia can now claim a place among the mining countries of the world, and that with favourable climatic and natural conditions, excellent laws and good government, and rapidly extending means of transportation and cheaper treatment of ores, many opportunities for the careful and proper investment of money are now here afforded. But it is also to

be remembered that this is no longer a terra incognita, that there are many here already closely watching for and prepared to purchase any good claims that may be discovered, and that it is quite absurd to suppose that any one, probably totally ignorant of mining affairs, can come here and in a few weeks pick up properties with phenomenally rich showings, as has been claimed by some who have come, bought and gone back to float companies by means of most specious prospectuses.

There are many good properties that from surface indications and scanty development, promise favourably, but it is at once seen that capital must be got, and for such companies are needed, but when such a company promises definitely large and speedy returns from properties with little or no development done upon them, the public should then be extremely suspicious.

The province has been made to unjustly suffer for the deeds of a few such companies, which have quickly proved their inability to fulfil their glowing promises of quick and large returns, although in some instances, when proper work has been done, these promises may yet be redeemed.

MINING DEVELOPMENT.

During the past year much new work was done and much new territory prospected, but no important discoveries of ore were made in the new localities or on new locations, although in the Nelson Division and along the coast, what may yet prove properties of great importance were being explored. On some of the older claims, new and large shutes of good ore were found, and some claims, hitherto unproductive, at the close of the year promised to join the list of shipping mines during the succeeding one.

Some districts were disappointing, as the comparatively limited work disclosed nothing; but progress in the Province is greatly retarded because so much presumably valuable mineral land can be located and held from year to year without the locators doing a stroke of work other than putting in the stakes. This is contrary to the law governing the location and possession of mineral claims, but the fact nevertheless remains that a very large percentage of claims is held from year to year by men re-locating each other's claims, and then deeding them back to the original holders, so that prospecting work, so very much needed, is not done, and men who would do work are kept out by an array of stakes.

To correct this serious and growing evil, the simplest plan is to require a certain amount of work to be done within ninety days after date of location. Some at once begin to cry out that this is an outrage on the poor prospector, who should be afforded every facility and protection in his arduous task of exploring these great mountain ranges. So he should; but he should not be permitted, as is now possible, not only to the great detriment of the country at large, but to his own, to lock up great areas of country by simply putting up posts and paying a few dollars for recording fees. It will soon be more generally appreciated that if the progress is not being now made that should be, the reason lies to a great extent in the fact that development is not being done over large tracts of our country that some such regulation as suggested would compel.

To the arduous work and privation of the prospector must be due the opening up of any mining region, but, without the aid of capital his efforts will be discouraging and often fruitless. At the present time, with the interest now being taken in British Columbia, capital will send its agents to the most remote and difficult parts, while many other countries are languishing for even a little attention; but these agents naturally demand that some work be done to enable them to form some judgment of the value and possibilities of the "prospect." During the past two years many seeking mining property for strong companies or syndicates have found that their choice must be greatly confined to "prospects," or undeveloped properties, and as ore deposits very rarely display their charms on the surface, they have had to turn away disappointed in that so little was done on claims they might have been willing to buy at good prices.

In some districts, prices for property have risen to very high figures, even for mere locations, but this phase is gradually correcting itself, and as many owners now wish to join the great rush northward to the new gold-fields, they will be willing to sell their claims at more reasonable rates. The stampede to the north will take many from the southern portion of the Province, but an increasing amount of work will be here done, and investors waiting for a lull in the former high prices will return, so that, while the different mining towns will be quieter, mining will continue to advance.

Into the northern portion of the Province, in Cassiar and Cariboo, long known as an untracked wilderness, will now spread a great wave of prospectors, with the consequence that

trails and routes will be opened up throughout this vast domain, and what discoveries will be made none can foresee. In earlier days were seen gold excitements at several points, but quartz ledges were not looked for and ignored, but now both placer and lode mines will be eagerly hunted for. Quite a number of men have in the past ventured into parts of these fastnesses, to return with favourable reports that were then not listened to, but will now be willingly received. The two railway companies, with large land concessions, are preparing to offer large inducements and rewards to prospectors who will enter their territory and may find placer ground or mineral-bearing veins.

Hence the activity in the north will be great and the discoveries may be of great value.

GOLD.

Gold is obtained either from the gold-bearing gravels of the placer mines, or from veins or lodes, and after these methods:—

(a.) By smelting ore from the veins or lodes;
(b.) By milling and amalgamation, together with cyaniding, of quartz ores;

(c.) By placer, hydraulic mining, or dredging of gravels. Gold ores, not amenable to amalgamation, or any of the wet processes, but profitably treatable by smelting to a copper-iron matte or base lead bullion and refining, are now the source of most of the lode gold produced in the Province, as at Rossland. By many who are only familiar with free-milling ores, the importance of these smelting ores is not appreciated, but their importance increases when it is learned that by this process a return of 95 to 98 per cent. of the assay value is guaranteed; that smelting charges are decreasing, and that with smelting plants becoming more easily accessible, the owner of a producing property of this class has not to incur the cost of a plant or mill to treat his ores, but can sell at once to the smelter.

Hence large bodies of sulphide, and otherwise refractory gold ores, carrying from \$15 to \$20 per ton in gold, as are being developed in the Province, are becoming profitable, and, in some centres, will become more so, when the railroads, building or projected, are completed. In Rossland, as stated elsewhere, the average yield value in 1897 for 68,804 tons was \$30.48 per ton, with a net value or profit of \$12 to \$16 per ton, which net value will, in all probability, soon increase.

In the Boundary Creek region the now low grade, gold-bearing sulphide ores may prove, on proper development, to improve in grade, as is already promised in the work being done on some of the properties, and in other parts ore of this character may become available with easier access to the smelters. Again, ore of this class, too low grade to pay to smelt, may yet be found profitable by some wet process of treatment, for which experiments have not been exhausted.

Hence with the extensions of the railroad systems now building, cheaper coal and coke and better smelter rates, these smelting gold ores will become more profitable.

Until recently only placer gold was sought out, and quartz veins received scanty and very desultory attention. Now, this search for free-milling gold ores has become more general, but so far the amount discovered has not been large, partly because there has not been time to determine by mill tests the values in the quartz veins found, most of which so far appear to be low grade, hence requiring most careful testing, and partly because enough work has not been done to disclose pay shutes.

A large amount of quartz has been found at Fairview and Camp McKinney in Yale, in Cariboo, in East Kootenay, in the Nelson Division, in Lillooet, and along the Coast and Coast Islands, but, with a few exceptions, these veins as tested have proved to have low values. The "Cariboo" mine at Camp McKinney has a good ore shute that has paid \$190,000 net; very rich free-milling ore was taken out of the "Poorman" lead near Nelson, and the "Fern" mine near there is now being oming a producer; but this class of mining has not yet made much headway, although the greater attention now being paid, the erection of stamp mills, etc., will greatly tend to prove up these leads, described elsewhere in this Report.

Mention has been made of the rush northward to search for quartz leads. Samples of good gold-bearing rock have already been received from there, and much quartz is known to exist.

The annual output of placer gold for many years has not been large, but companies are now opening up hydraulic mining leases in different parts of the Province, and some very large work is being done in Cariboo, as described. During the past year some engaged in dredging on the Fraser have met, for the first time, with encouraging success, and as the conditions are better understood and more experi-

enced men, with means and the plants best experience now recommends, attack this problem, the more hopeful it now becomes that the gold lying in these rivers will be at last secured.

SILVER LEAD.

The silver mines of the Province produced by far the greater part of the output of the mines for 1897, and although silver is not now held in such high favour, its friends are getting handsome returns from the high grade ores, as produced in West Kootenay. With the notable exception of the silver-copper ore of the Hall mines, and some of the smaller properties, all of the silver ore carries a very high percentage of lead or occurs in galena, and in two or three cases, galena and blende.

During the past summer the rapid decline in the value of silver, that proved so disastrous to other silver countries, had little effect on our silver mines other than to check investment, as the ores were usually of such high grade as to leave, even at the lowest price, a good margin of profit. The price of lead rose considerably, but this increase was offset by the increase of the export duty on lead into the United States, our best market, of 1.5 cents per pound of the gross lead contents in the ore.

So far all this silver-lead ore has had to be exported to the United States for treatment, but at both the Trail and Nelson smelters, lead stacks are being erected, and the smelting of this high grade ore will be attempted, provided "dry ore," or that containing less than 5 per cent. of lead can be got to intermix. So far the amount of this "dry" silver ore has been very small in this Province, and its discovery would greatly serve to simplify the smelting of these silver-lead ores within our own borders.

West Kootenay produced nearly all of this ore during 1897, the "North Star" mine in East Kootenay suspending shipments until the completion of the Crow's Nest Pass Railway. As stated elsewhere, the average net or yield values of 33,576 tons of the Slocan ore were 108.5 ounces silver per ton, and 45.7 per cent. lead, with a total gross value of \$97.70 per ton, or \$50 to \$55 net.

COPPER.

No large copper mines have yet developed. The production of 5,325,000 pounds during 1897, came almost entirely from Rossland and the Hall mines at Nelson, the average yield value at the former being 1.32 per cent., at the latter 3.63 per cent.

Work is in progress on the, at present, low grade copper-bearing deposits in Boundary Creek district, and considerable prospecting was done at Kamloops, on the St. Mary's in East Kootenay, and on the Island of Vancouver and adjacent islands, especially at the "Van Anda," on Texada Island, whence several hundred tons of good grade bornite ore were shipped.

In these districts last named, the ore is usually chalcopyrite in eruptive, diabasic rock, associated with pyrrhotite and sometimes with magnetite. Small bodies of massive "yellow copper" ore have been uncovered, but for such ore to be profitable, there will need to be large bodies carrying a fair percentage in copper, and enough silver or gold, or both values, for in mining large quantities, as would be imperative, the copper averages would almost certainly become low, hence requiring certain values in precious metals to make a total value sufficient to leave a margin of profit. In these districts some very promising discoveries have been made, and work is being begun upon them.

COAL AND COKE.

The production of the Collieries on Vancouver Island was about the same as that of the previous year, but in 1898 the demand for coal should greatly increase in consequence of the very great increase in the number of steamers engaged in the northern trade. The coke ovens at Comox produced over 17,000 tons of coke, mostly for the Kootenay smelters, and large barges are being built so that the coke can be sent to the mainland in cars, to avoid reshipment there.

The great fields of coal in East Kootenay will soon be available, as the railroad through the Crow's Nest Pass west to the Columbia River will be completed in another year, when coal and coke will be delivered in East and West Kootenay, and thus effect great improvement in the conditions affecting the smelting industries of the Interior.

OTHER MINERALS.

About 2,000 tons of magnetic iron were shipped from the Glen Iron Mines near Kamloops, to American smelters for a flux.

Some platinum was secured from the hydraulic and placer mines in Cariboo and Yale, and the Minister of Mines has asked for samples of black sand to be sent into the laboratory of the Department, where such will be tested free for platinum and iridium, for both of which are ever a good market and good prices.

The cinnabar mines in the Kamloops district have temporarily shut down, without proving anything yet of value.

WORK OF THE DEPARTMENT OF MINES FOR THE YEAR.

The Provincial Mineralogist began in May the field-work of the season in Yale, at Vernon, after which the gold-bearing quartz leads at Fairview and Camp McKinney were examined. Then the different camps in the Kettle River (or Boundary Creek) and Grand Forks Divisions were visited, and a Bulletin would have been then issued if the railroad projects had not been unfortunately deferred for that year, after which it was thought the report published at a later date, as now, would prove of equal service to this promising region.

In July, about three weeks were spent in Rossland studying the progress of mining there; after which a hurried inspection was made of the Trout Lake Division during a period of very wet weather; this season having been unusually rainy throughout the Province. Crossing over the range east of Kootenay Lake by the Pilot Bay Trail, a portion of the territory drained by some of the tributaries of St. Mary's River in East Kootenay, next demanded attention, and in August, after seeing the "Lanark" mine in Illecillewaet, a more extended period was spent in Cariboo, where nearly all the mining enterprises in progress were seen. About the end of September some of the properties on Cayoosh Creek, Lillooet, were inspected, and the mineral area of Kamloops, after which, or in October, the Mineralogist returned to headquarters, at Victoria.

Two visits were then made, one to Mt. Sicker on Vancouver Island, the other to Texada Island, and in January a short trip was made through West Kootenay to expedite the collection of the statistics of the mineral output of the year.

Hence a large area of country, in much of which work is just beginning, was examined, and necessarily this work partook greatly of the nature of a reconnaissance review, so that a report on the general condition of affairs could not be made to the Minister of Mines.

This report gives as full an account of the mining industry in the Province during the past year as has been possible, and by reason of its publication promptly after the expiration of the year, more careful revision and condensation of the various reports have been sacrificed to promptness of issue.

OFFICES AND MUSEUM.

On the completion of the new Legislative Buildings, the offices in the new building were occupied, and the former Legislative Building now being completely overhauled, will make an excellent museum for the large and good collection of ores, minerals, rocks, etc., now waiting a place for display. Laboratories and class-rooms for the assayer and students will now be equipped, as well as new assay laboratories."

SPECIAL REPORTS.

The special features, however, of the Minister of Mines' report this year are the descriptive articles from the pen of the Provincial Mineralogist on the Cariboo, Trout Lake, Boundary Creek and Nanaimo districts, which were officially visited by him during the summer and autumn months of last year. That Mr. Carlyle has a wonderful capacity for work may be inferred from the fact that he could, in the limited space of time at his disposal, travel over so large an area of country and actually examine the claims and mines of any importance in these camps with a view to reporting on the appearance and promise of each. Any mining engineer will recognize the difficulties of such a task. The report on Cariboo is particularly interesting, and will doubtless open the eyes of even the residents in the Province to the extensive work that has been carried on in this district during the past four years, the large expenditures of capital and the huge plants of machinery installed in this short period. After speaking of the "opportunities for the investment of capital" in the Cariboo, which are excellent, providing first, there is abundant capital, and secondly men only of undoubted experience and competence are employed to direct the mining operations, — disregard, by-the-way, of one or the other of these essentials has already accounted for the several failures in this district—Mr. Carlyle goes on to describe the possibilities here of successful mining. For hydraulic working the extensive auriferous gravel deposits in the ancient river system as yet betrayed only here and there, as at the Cariboo and Horsefly mines in the Quesnelle River district, merit investigation, and

in the Barkerville district along the creeks from which high values were mined out in the early days there remains a large amount of gravel that will pay well if mined by hydraulicing, the only difficulty being the limited supply of water. It is also possible that new territory will be discovered along the continuation of this gold-belt to the north-west. Drift mining is being prosecuted on Willow river, and on Slough creek, but on the lower parts of these streams and on Willhams and Lightning creeks there are miles of channel awaiting exploration. Placer mining is nearly entirely confined to Chinese workers and the beds of the various creeks in which gold has been found have been carefully worked over, except in the very deep and rapid channels, but on the South fork of the Quesnelle, the Golden River Quesnelle Mining Co. are pioneers of an enterprise to save the gold in this swift-flowing stream by placing a dam across the river where it flows from the lake.

The possibilities for quartz mining in Cariboo do not appear at the present time to be very promising, owing to the low-grade value of the ore and the existing costly facilities for transportation. Dredging for gold has not been heretofore attended with great success but there are certainly auriferous bars in many of the rivers flowing through the district, from which gold may be obtained with proper appliances. Mr. Carlyle disapproves entirely of the suction form of dredge and recommends the bucket dredge as the only suitable device.

THE TROUT LAKE MINING DIVISION.

The Trout Lake district has only lately begun to attract attention, but the showing on the mining properties which have been to any extent developed is most promising, and there is every prospect that this section of the province will prove very rich in minerals. The ore so far found in this district is "essentially argentiferous galena, mixed with this galena is more or less tetrahedrite or grey copper, in direct proportion to the amount of which is the value in silver, and on some properties, as the 'Silver Cup,' etc., good gold values are also carried. More or less zinc blende is nearly always present and often copper and iron pyrites. However, some other variations are seen as on the 'Sunshine' and 'Great Northern' groups where galena and coarse cubed pyrites form much of the ore, while on the latter lead nearly solid copper pyrites is localised in small pay-streaks, and on the 'Great Northern' and 'True Fissure' the ore is mostly iron pyrites in quartz, carrying small values in silver, or 12 to 30 ounces, and \$1 to \$4 in gold. On the surface, many of the veins show a large development of white-weathering milky-white quartz, with in some leads siderite or spathic iron, and while much of this quartz may be barren, it is in other parts mineralized or speckled with pyrites and galena which is found often segregated into bands of solid ore, or else so disseminated through the quartz gangue as to form ore that must be concentrated, so that while clean ore can be hand-picked and thus shipped, concentration will be a necessary adjunct for many of the properties. On some claims the galena ore occurs in small veins up to 8 to 12 inches wide of solid material, but much more work is yet essential to demonstrate their persistency or continuance."

At present the transport charges to Arrow Lake are prohibitive except for very high grade ores, but owing to the low passes and deep valleys there would be little difficulty in penetrating the country with a railway when conditions warrant.

THE BOUNDARY CREEK DISTRICT.

The report on the Boundary Creek district will perhaps prove to mine owners of the camp, disappointing. Mr. Carlyle has taken a very conservative view of the situation, and while speaking of the "extensive surface showings" points out that development work is still needed to determine whether beneath these there are ore deposits of value. "Some have written of this region" he says, "as being rich in copper ores, but as yet this is not proved, but there are certainly large zones carrying from 1 to 3 and 4 per cent. of copper, and some gold values. About all one can say at the present stage of very scanty development is that throughout this region are (apart from the quartz veins and veins of high grade ore) large ledges or mineralized portions of the greenish feldspathic rock, already described from which good gold assays are obtained and which offer every inducement to extensive exploration. If more concentrated parts or regular ore-shutes are found, there is every reason to believe that such ore would prove to be very profitable as such good, but not pay, values are already got from a large amount of mineralized rock matter, and even some good pay ore has been found in the very limited work done. It is impossible at the present time to give a definite or really satisfactory account of the ores and ore deposits of the Kettle River-Grand Forks District, as no producing mine has yet developed; no smelter or mill returns can be referred to, and much of the workings could not be seen as work had

not been resumed and water had accumulated, but the prospects of this becoming an important mining district are excellent if we can judge from surface indications and the little work done." In spite of this not very enthusiastic "summing-up" the report will convey to mining men the impression that, we fancy, was intended, that of all the "new" districts of the province Boundary Creek is the most promising.

TEXADA ISLAND.

The fourth of the special articles by the provincial mineralogist, to which we have referred, deals with the prospects of Texada Island mining. Here again Mr. Carlyle has found it necessary to speak in very moderate fashion, although on the whole his remarks are encouraging. It is only during the past two years that the island has been prospected at all extensively, and the revival of interest that led to this activity Mr. Carlyle attributes to "(a) the discovery of gold values in sulphides similar to those at Rossland; (b) the extraction of gold in small quantities from these small quartz veins by crushing in a small mortar, and panning rich decomposed surface material, by which one or two men have made a living for years; (c) the discovery of the 'Van Anda' ore-shute.

"Little idea can yet be formed of the prospects of mining on this island, but the considerable amount of work now in progress and to be detailed below, will greatly serve to show what values may be in these various veins and deposits. It can be said that the values now being got (not referring as to the 'Van Anda') in this initial work although not high, are such as to encourage much more work, to learn whether depth will disclose better quantity and quality of ore, and, as in nearly every new district, this preliminary work must simply be awaited when surface indications give but very scanty clues.

"On the 'Van Anda,' the small and insignificant out-crop discovered, has proved to be only a small pointer or index to a much larger ore-body below, and on some of the properties, the small surface indications may be found to cover important leads."

Excellent and cheap facilities for shipping the product of the mines by water transport is a great advantage of mining in Texada, where also economic conditions of abundant wood and water supply are also favorable. The ores are chiefly bornite, chalcopryite, moynettite, and quartz with free gold.

SMELTING IN THE SLOCAN.

Perhaps, however, the most interesting part of the whole report is that dealing with the smelting of the silver-lead ores of the Slocan, and the figures as given should be a powerful weapon in the hands of those who are now asking the Federal government to take action in the matter of fostering the local smelting interests. The freight and treatment charges of the Slocan ores are from \$20.50 to \$22.00 per ton, cost of carriage being \$19.50 per ton, and the Colorado smelting rates from \$1.50 to \$3.00, on the net weight (i. e. less moisture). The low smelting rate is due to the fact that the American smelters are eager to get this class of ore as it is for economical smelting purposes it is required to mix with the dry ores of the Colorado mines. But this rate applies only to ore in which there is not an excess of zinc or above ten per cent., over this for every unit there is an additional charge of 50 cents. "Silver is paid for at New York price at time of settlement for 95 per cent. of assay value, and lead also up to 90 per cent. of assay value. The duty is 1.5 cents on every pound of lead in the ore as exported to the United States, although the smelter only pays the miner for 90 per cent. The ore is shipped in bond to the smelter, where the smelter men pay the duty, after sampling, to the United States government out of the value of the ore, or else they retain this duty charge, and ship refined lead to Europe when the prices there, always lower than in the United States, are such as to admit of a margin of profit by adding the amount of their duty to their selling price. Hence the mine owner always pays this duty charge on lead.

The Province levies a tax of one per cent. on the value of the ore after deducting freight and treatment charges. Hence the average ore for 1897 yielding 108.5 ozs. silver and 45.7 per cent. lead, at the average prices for 1897, would be worth \$97.70 per ton, from which have to be deducted :

Freight and treatment	\$22 00
Duty on lead (100 per cent).....	15 25
Government tax.....	75
	<hr/>
	\$38 00

Besides the cost of mining, sacking and transport to point of shipment, so that the net value or profit on average Slocan ore will be about \$50 to \$55 per ton."

There are very few mines in other parts of the world that could stand such charges as these, but the figures prove that provided steps are taken to secure the refining of the bullion

and the manufacture of the lead products in Canada a large margin would be afforded for profitable local smelting. The increase for the past year in the production of the Slocan mines is shown in the following tables :

NET PRODUCTION PER SMELTER RETURNS.

Years.	Tons 2,000 lbs	Silver, oz.	Lead, lbs.	Gold, oz.	Values.
1895.....	9,514	1,122,770	9,666,324	6	\$1,045,600
1896.....	16,560	1,954,258	18,175,074	152	1,854,011
1897.....	33,576	3,641,287	30,707,705	193	3,280,686
Totals...	59,650	6,728,315	58,579,103	351	\$6,180,686

ACTUAL YIELD VALUES PER TON.

Years.	Silver, oz.	Lead, per cent.	Value.
1895.....	118.0	50.8	\$109 90
1896.....	118.0	54.9	111 95
1897.....	108.5	45.7	97 71
For 59,650 tons	111.12	49.1	\$103 60

It will be seen by the last table that there is a marked depreciation in the average value of the ore treated during 1897, but the explanation will be probably found in the fact that about 7,000 tons of ore out of the total of 33,576 tons shipped was from the Ruth mine where the grade of ore is, comparatively speaking, low, thus bringing down the average. On the whole the report of the Slocan districts is eminently satisfactory.

THE ROSSLAND CAMP.

After speaking of the depression following the bubble "boom" of 1896, Mr. Carlyle states that the Rossland camp has now "settled down to a business-like basis" and predicts that henceforward "as work increases, and like-wise the payroll, so proportionately, will be its prosperity." It is only necessary, however, to study the tables showing the output of the Rossland mines for the last four years, or from the commencement of the camp's history, to date, to recognize the remarkable progress that has been made in that short space of time. The table gives the actual yield values of the ore as paid for by the smelters, or 95 per cent. of the assay values in gold and silver, and the amount of the wet assay of copper, less 1.3 per cent., and also the net weight of ore, or less the moisture.

Some of the returns, it must be remembered, for December, 1897, were not received by the department in time to be included in the report.

NET PRODUCTION, PER SMELTER RETURNS.

Year.	Tons, 2,000 lbs	Gold, oz.	Silver, oz.	Copper, lbs.	Value.
1894.....	1,856	3,723	5,357	106,229	\$ 75,510
1895.....	19,693	31,497	46,702	840,420	702,459
1896.....	38,075	55,275	89,285	1,580,635	1,243,360
1897.....	68,804	97,024	110,068	1,819,586	2,097,280
Total....	128,428	187,519	251,412	4,346,870	\$4,118,607

AVERAGE NET SMELTER RETURNS, ACTUAL YIELD VALUES PER TON.

Year.	Gold.	Silver.	Copper.	Value.
1894.....	2.00 oz.	2.89 oz.	2.85 %	\$40 69
1895.....	1.60 "	2.41 "	2.10 "	35 67
1896.....	1.45 "	2.34 "	2.08 "	32 65
1897.....	1.42 "	1.60 "	1.32 "	30 48
Average, 128,428 tons..	1.46 oz.	1.96 oz.	1.73 %	\$32 05

From the above values, the cost of mining, transportation, treatment, and Provincial Tax has to be deducted, or, calculating from scanty information, from \$15 to \$18, leaving a net

value or profit for the production of 1897, of from \$12 to \$16 per ton.

As in the case of the Slocan, there is here also a noticeable falling off in the average values of the ores treated, but this is due to the reduced cost of transportation and smelting, which has made possible the mining of the lower grade ores of the camp. Since the purchase of the Trail smelter by the C.P.R. a still further reduction has been made, and the cost of mining and treatment will probably now not exceed from \$13 to \$16 per ton. With the completion of the Crow's Nest Railway, when the price of coke will be very much less than it is at present, the cost of smelting should be reduced by at least another dollar per ton. Mr. Carlyle thus sums up the existing condition of mining at Rossland:

Except for the work done on eight or ten claims the amount of development has been to the present too small to demonstrate much, consisting, as it has, of short tunnels or drifts and shallow shafts, but where more generous development has been done, the results so far have been most encouraging, new ore bodies have been uncovered, or ore bodies hitherto carrying little or no values are found to be increasing in value. More pay ore is now in sight than at any other time in the camp's history, and the writer still holds to his belief that "it is quite impossible that the large shutes of rich ore that have been shown on the surface by denudation, will be found to be the only ones."

OTHER VALUABLE INFORMATION.

Among other interesting and useful information to be found in this report is a list of the machinery installed at the mines of South Kootenay, a list of Crown Grants issued during the year, the reports of the Gold Commissioners and Mining Recorders, and a report by the Inspector of Coal Mines on the Vancouver Island collieries. The report is handsomely illustrated with engravings from photographs obtained by Mr. Carlyle on his visit to the mining districts last summer, and an excellent sketch map of the Province showing roads and railways is also provided. It is decidedly the best report yet issued by the Department.

THE SOPHIE MOUNTAIN CAMP.

A year and a half ago the Sophie Mountain Camp was practically unknown; to-day it is attracting more attention than any other partially developed portion of the gold-copper producing district of West Kootenay. To say "West Kootenay" is not altogether correct, because the summit between Little Sheep and Big Sheep Creeks, of which Sophie Mountain forms the highest peak, is the line of demarcation between West Kootenay and Yale, and the mines, so far, lie on the west side of the mountain. But the recording is done in Rossland, and the mining business has so far also been done there, so that Sophie Mountain, for practical purposes, is part of the Trail Creek district, for the present, at all events.

About the time of the first rush into Trail Creek, Mr. E. S. Topping, of Trail, and Mr. L. Mulholland of Rossland, heard of a big quartz vein which outcropped in the Colville Reservation, crossed the boundary line near the summit of Sophie Mountain, and showed a very strong bold outcrop on the western slope towards Big Sheep Creek. They made up a party and coming in over the mountains, from what is now Clark's Camp on the Red Mountain Railway, located a claim which they called the "Sophie," and from this claim the Mountain took its name. A good deal of prospecting was done on the ledge, but without sufficiently rich ore being discovered to warrant development under the conditions of freight and treatment then existing. The claim was allowed to run out, but another old Kootenay pioneer, Jeff Lewis, relocated the ground and named it the "Victory." He and his partner afterwards staked the "Triumph" as an extension, and later still the "Portland," "Velvet," and "Bluebell."

It is a curious fact that although this group of property is probably the most valuable of any similar

acreage in British Columbia; although the prospects had rich ore on the surface; although they were conveniently situated for mining and only six miles from the line of the Red Mountain Railway, and possessed a magnificent site for a town and smelter, with ample water power on Big Sheep Creek, about a mile away, they were, during the early excitement around Rossland, absolutely neglected. Hundreds of prospectors and speculators were, during the summer of 1896, pouring into Champion Creek, Bear Creek, Wild Horse Creek, and other districts, while hundreds more were crossing almost over the mines into the Christina Lake and Boundary districts, yet it was not until October, 1896, that any one took hold of any property on Sophie Mountain.

About this time a company was formed in Rossland to work the "Victory" and "Triumph." A drift tunnel was started on the "Victory" vein, and before the company was obliged to cease operations for want of funds, it was run 185 feet, giving a vertical depth of 140 feet and opening three big chutes of solid ore, only one of which, however, is of shipping grade. Some work was also done on the "Triumph" west vein, but it was found to be so badly broken up and faulted that it was abandoned until the surface could be more thoroughly explored. This was the position of affairs in the spring of last year. Since then control of the "Victory-Triumph" stock has been purchased by Mr. D. B. Bogle, representing the Kootenay Goldfields Syndicate of London, and another company has been floated in London to carry on developments on the property.

The "Velvet" was originally looked on as an insignificant extension of the "Triumph," until a wonderful outcrop of copper-gold ore was discovered in doing assessment work for 1897, just 300 feet from the end line of the "Triumph." This led to the purchase of the property by the "New Goldfields of British Columbia," in whose hands it has been rapidly developed since. Another discovery made in 1897 was that of the "Triumph" east vein, on which the richest gold ore in that section was found, but on which no development has been done as yet.

In sinking a shaft to a depth of 150 feet and in drifting on the 100-foot level, the "Velvet" has taken out about 400 tons of clean rich ore, which has been shipped, since January 1st, to the Nelson smelter. The ore of this camp is of great value to the district, because it contains the high percentage of copper so much needed. The "Velvet" is altogether a remarkable mine. Such an output and such an exposure of clean, high-grade ore for so small an amount of development work, is very unusual. Should the "Velvet" ore-body maintain its surface inclination, it will dip into the ground of the "Whoopup," which has been purchased by the "British America," at a depth of between 1,000 and 1,500 feet, and it was on the strength of this that the "Whoopup" was purchased, although there is a fair showing on the "Whoopup" itself, and development may accomplish much, independently of the "Velvet."

A company has just been organized to take hold of the townsite in connection with these mines. This consists of a Crown Grant of 320 acres, extending over the flat from the point where the Dewdney trail crosses Big Sheep Creek, to the boundary line. The mines lie about 1,000 feet below the divide between Little and Big Sheep Creeks, and the only feasible outlet for the ore at present is down the valley of Big Sheep Creek to the Red Mountain Railway, via this new town.

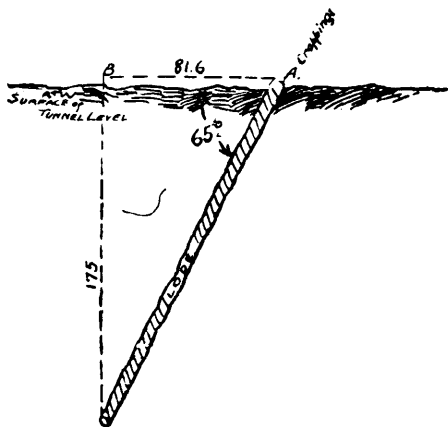
Both the "Velvet" and the "Victory" however, possess such a vast tonnage of concentrating ore that it will be necessary to have reduction works of some kind, either smelting or concentrating, in the immediate neighborhood, and the natural point for such works is on the creek below, which possesses ample head of water to supply all the power needed. The Companies are already figuring on locating their compressor plants at the foot of the hill, and driving them by power furnished from the creek. Should no more be discovered than is already known about the "Sophie Mountain Camp," this town has a bright future before it, but such a stimulus has been given to prospecting and development by the events of last year, that it is more than likely this season may see the beginnings of a very productive district on Big Sheep Creek, of larger area than is at present expected.

A USEFUL TABLE.

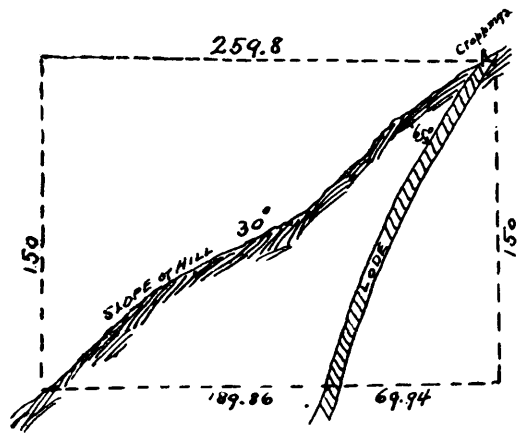
THE following table for calculating the horizontal distance from a cropping, etc., to sink a vertical shaft, to run a tunnel, to intersect a lode of a known dip, at any desired distance below the level of the cropping, was compiled by a well-known mining engineer of San Francisco, Mr. W. G. Luckhardt, E.M.

Degree of dip of Lode.	Horizontal distance from cropping or point of intersection per foot vertical.	Degree of Dip of Lode.	Horizontal distance from etc., etc.
5 °	11.43	50 °	8391
10	5.71	55	7002
15	3.732	60	5773
20	2.747	65	463
25	2.144	70	3639
30	1.732	75	2679
35	1.428	80	1763
40	1.191	85	.08749
45	1.000	90	.00000

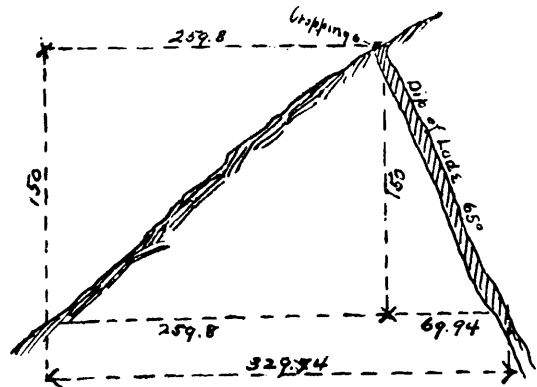
Example: Dip of lode 65 °. Required to strike the lode, or vein, at a depth of 175 feet below the surface.



Opposite to 65 ° in table will be found the horizontal distance for one foot vertical. Multiply this factor by the depth it is desired to intersect the lode or vein, the result will be the distance from the croppings at which to begin operations.
 $.4663 \times 175 = 81.6$ or 81.6 feet



Slope of hill 30 °.
 Dip of lode or vein 65 °.
 Required to strike the lode or vein at a vertical depth of 150 feet below the outcrop; and also the length of the tunnel or adit.
 In table find 30 ° = 1.732 × 150 (depth) = 259.8 feet horizontal distance from outcrop.
 65 ° = .466 × 150 = 69.94.
 259.8 - 69.94 = 189.86 feet, which is the length of tunnel.



Slope of hill 30 °.
 Dip of lode or vein 65 °.
 Required to intersect the lode by tunnel at 150 feet vertically below croppings, also length of tunnel.
 In table find:
 30 ° = 1.732 × 150 = 259.8.
 65 ° = .4663 × 150 = 69.4.
 259.8 + 69.94 = 329.74, which is the length in feet of tunnel.

FROM KAMLOOPS.

(By Dr. S. M. Wade).

AS a starting point for prospectors Kamloops presents many advantages. In the first place it is itself easy of access, being on the main line of the Canadian Pacific railway and only a few hours journey from Vancouver, the Pacific terminus of the great Canadian highway from East to West. Then it is well supplied with stores of all kinds, and prices are reasonable. Tents, blankets, provisions, pack saddles, footwear and clothing for winter and summer are all obtainable at moderate figures. Pack animals and saddle horses, or dogs for sleighs, can be bought in any number for not only is there a large Indian village within two miles of the town, but there are many other Indian reserves,

all capable of contributing their quota of horses and dogs (not to speak of lesser animals), within easy reach either by rail, wagon-road, or river.

Dogs sell at from \$5 to \$10 a piece, and "broke" pack or saddle horses bring from \$15 to \$25 a head. A good pack saddle costs about \$5 more, so that the pack animal, complete, (barring his "pack") requires an outlay of from \$20 to \$30.

To the general prospector, no part of British Columbia presents a better field than does this district. On every hand are mineral deposits, coal, gold, silver, iron, copper, lead, quicksilver; and so open is the country hereabout that travelling is a pleasure rather than a hardship. Forty miles north of Kamloops—and the same distance to the east—this open character of the hills changes. The hills become more densely wooded and for the greater part of the way the trails must be followed, that is, so far as the horses are concerned. But the trails are numerous, traversing the mountains in all directions, having been made by the Indians in their excursions from village to village.

Should the prospector desire to look for placer gold he may do so to advantage without leaving the Thompson valley. Placer mining was carried on at both Lewis and Barriere creeks as early as 1861, and speaking of this neighborhood Dr. Geo. M. Dawson says: "Running across between the Barriere river and Lewis creek, is a well-marked high valley. This is continued also to the north of the Barriere for some miles." * * * "This valley is partly filled with drift deposits, but its rocky bed is probably 300 feet above adjacent parts of the main river." * * * "Coarse gold has been obtained in the small stream which now runs northward out of this valley to the Barriere. If auriferous gravel should be found to remain in the bottom of this old valley these might be worked by drifting, with free drainage."

Dr. Dawson also is of opinion that auriferous gravels exist in Pass valley, a few miles north of Kamloops, and running westward from the North Thompson to Cache creek, being intercepted *en route* by Deadman's creek and Tranquille creek or river, both of which carry coarse gold in their gravels. Should the more distant districts of Cariboo, Omineca or Cassiar, prove alluring, the prospector, by following the trail from Little Fort on the North Thompson, reaches the Cariboo wagon-road at Bridge creek and either goes right on to Cariboo, or switches off at Quesnelle, and is soon among the auriferous streams of that promising section known as Omineca.

Instead of taking the trail from Little Fort to Bridge creek, the North Thompson may be followed until its confluence with the Clearwater river is reached, and from that point the latter valley is followed, and the trail taken to the Horsefly and thence to to the 150-mile house on the Cariboo road, 50 miles below Bridge creek. This route is over likely ground about which, from a miner's point of view, comparatively little is known, and there is no doubt it will repay investigation. During the coming season there is reason to believe that a great deal of attention will be bestowed by prospectors on this section, and also on that large tract of country known as the Adams' Lake district, together with the section north of it through which runs the North Thompson in its upper reaches. This stretch of territory undoubtedly contains vast and valuable silver-lead deposits; their existence is a well-established fact, and their importance and value has been sufficiently well demonstrated to warrant their

development, and to most decidedly encourage further exploitation of that locality.

With from \$50 to \$100 a prospector can purchase at Kamloops a pack horse, saddle, tent, and supplies sufficient for from two to six months, and start out prospecting, and may expect to "strike it" from the very outset, in a country and climate where camping out is a luxury, and with the comforting assurance that while in a mineral section of great promise he is but a few days journey, at the farthest, from the centres of civilization.

Guides can be obtained, by those who do not care to trust entirely to their own resources, at any of the several Indian villages, and their employment may be a matter of economy when prompt arrival at a certain goal is particularly desired.

While around Coal Hill and the immediate vicinity of Kamloops, the ground has been pretty thoroughly looked over by prospectors of every grade of knowledge and experience, ranging from the tenderfoot, who cannot tell the difference between a flap-jack and a frying-pan, to the seasoned old hand to whom every "wrinkle" imaginable is as old as the hills he climbs, on every hand are vast areas barely looked at. These practically unexplored areas, of which the Adams' Lake district already mentioned is one, will undoubtedly be more carefully searched this summer and the prospector, whose reason is not affected by Klondicitis, cannot find a more promising field for a season's work than here.

The fact that the Coal Hill properties are coming to the front, indicating the drawing of capital to the Kamloops district, should encourage local miners and new-comers alike to strike out for additional finds in pastures new but not remote.

OPERATION OF HYDRAULIC JETTING MACHINES IN CARIBOO.

THE miner in the early days of Cariboo, after the discovery of the phenomenally rich creeks of the district, was handicapped in his endeavours to locate the old channels, not only by reason of the great ex-



TWO MACHINES AT WORK.

pense incident to his search but particularly by the uncertainty as to their courses. No way was then known of determining the depth and location of the old channels but by the sinking of shafts or the running of tunnels.

This method was expensive and at the same time

had an element of uncertainty about it which made the miner hesitate to undertake the prospecting of valleys or gulches where the indications were apparently favourable to a deep bed-rock.

Had a method been known at that time, whereby the depth and location of the old channels could have been proven, with even a reasonable degree of accuracy, and with the expenditure of a comparatively small outlay, many of the valleys and gulches would have been prospected and developed which have never been exploited.

In recent years machinery, designed for this work, has appeared and been operated successfully. In Cariboo the first company to use machinery for this purpose was the Slough Creek Mining Company. This company, by the use of hydraulic jetting machines, illustrations of which accompany this article, secured a geological cross-section of the valley of Slough Creek at the mouth of Nelson Creek, and the old channel was found at a depth of 287 feet.

In the operation of this machine, water is forced from the surface through a drill rod of 1½-inch wrought tubing, carrying drills of various pattern as required, with orifices through which the water is forced with sufficient pressure to carry with it, in its outward flow, the sludge from the drills, through the space between the drill rod and casing which is driven from the surface or sunk by means of a rotary attachment to the jetting machine, and in both cases following the drills.

The following memoranda from data secured in the sinking of the deepest drill-shaft upon the property of the Slough Creek Mining Company, may be of interest, and serve the purpose of showing rate of progress :

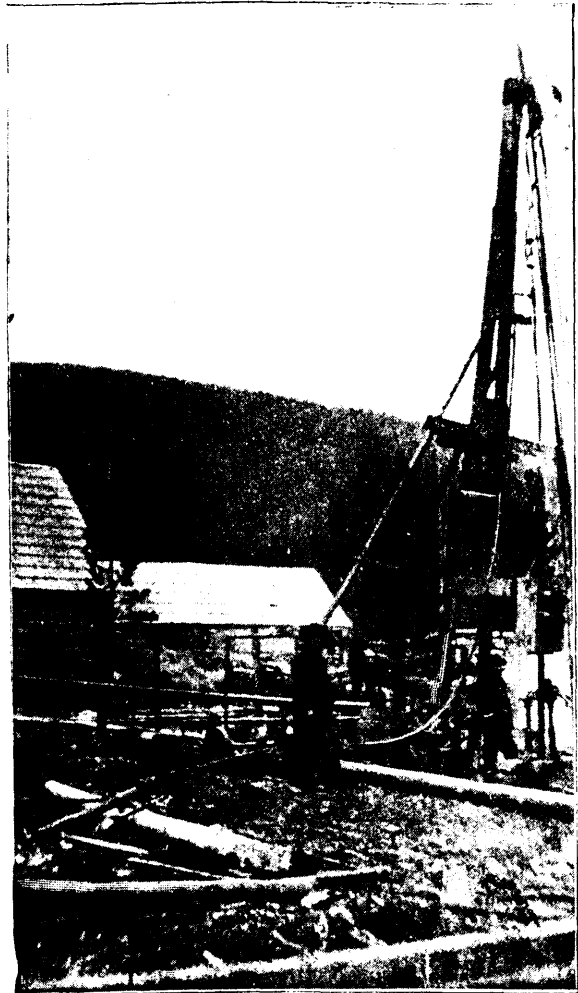
A shaft was first sunk by hand to a depth of			
fourteen feet, through—			
Surface formation, with boulders.....	11 ft.	0 in.	
Clay.....	1 "	0 "	
Loose gravels.....	2 "	0 "	
	14 ft.	0 in.	
Drilling begun Aug. 22nd, 1895, and progressed as follows, viz.:			
Aug. 22	Gravels	6 ft.	0 in.
" 23	"	15 "	8 "
" 24	"	11 "	4 "
" 25	Gravels, 8 ft., Yellow Clay 2 ft.....	10 "	0 "
" 26	Clay and gravels.....	10 "	3 "
" 27	"	8 "	0 "
" 28	"	8 "	0 "
" 29	Red gravels, containing pay.....	6 "	0 "
" 30	"	6 "	9 "
" 31	Blue clay.....	16 "	0 "
Sept. 2	"	70 "	0 "
" 3	Blue clay 64 ft., gravels 4 ft. (2 shifts).....	68 "	0 "
" 4	Gravels—very compact, (2 shifts).....	31 "	0 "
" 5	"	6 "	0 "
Reaching bed-rock at a depth of.....287 ft. 0 in.			

This shows a rate of progress averaging about 18 feet per day of ten hours. The average rate per day through the gravels, was about 12½ feet. The rate upon two other of the drill shafts, was viz.: Depth of shaft, 260 feet; 12 feet per day, with nearly 10 feet through gravels; and depth of shaft 219 feet, 14 feet per day, with about 11 feet through gravels. These memoranda include the time spent in changing drills, connecting and driving casing, and the delays incident to such work. From time to time strata of cemented boulders were encountered, which reduced the rate of progress materially. The casing used was wrought iron, and in the 27-foot shaft a depth of 100 feet was reached with 6-inch casing, then 4½-inch inserted, reaching a depth of 156 feet, 6 inches, then 3-inch in-

serted, reaching to the bed-rock. After completion of the drill shafts the casing may be drawn and, with new threads and occasionally new couplings, used as long as servicable.

In one instance, that of the 219-foot drill shaft, the shaft was continued into the bed-rock a distance of 9 feet 6 inches, which required 4½ days' time.

In the use of these machines there is often opportunity for display of judgment in the matter of contending with difficulties as they arise, and there are occasions when action has to be taken without delay in order to prevent mishap, or to correct mishaps already experienced, but on the whole the experience of this company was entirely satisfactory, both in the matter of expenditure and result. By the use of these



A JETTING MACHINE ON SLOUGH CREEK.

machines a geological cross-section may be secured of any valley or gulch, at a reasonable cost, and with the location and depth, as between the rims, known, even approximately, the work of reaching the old channels by direct shafts, or by shafts through the bed-rock on the rims, and tunnels, is greatly facilitated.

It may be of interest to refer to the gold prospects obtained from the drilling, and while the jetting machine is intended only for determining the depth of the bed-rock, and not for prospecting the strata for gold, still in the experience of the Slough Creek Mining Company, hundreds of colors, up to a pin-head size, were obtained from every drill shaft sunk, and the best prospects were obtained from the bed-rock gravels

in the deepest shaft, but only such colors were brought to the surface as had been carried up by adhering to particles of clay, or in small pieces of cemented gravel not broken by the drill. The use of these machines will undoubtedly be a means of assisting in the development of deep channels throughout the various auriferous gravel mining districts.

FROM NELSON.

THERE is very little to report from this neighbourhood that is either new or interesting — the long winter prevents much development excepting of course on those properties that are already passed the initial stage, and we can only "rest on our oars" and await the more genial weather.

Those well-known mines, all practically on Toad Mountain, the Silver King, Fern and Athabasca, have all been steadily shipping ore to the Hall Mines and other smelters throughout the winter, and from all accounts have each of them done very well. The Silver King is, of course, by far the largest concern, and to ship daily, for weeks continuously, some 250 or more tons of smelting ore is no mean record for any mine so



BEAUTIFUL FALLS, NELSON, B. C.
(Photo by Edward Bros., Vancouver, B. C.)

young comparatively as the Silver King is. Several other as yet little known claims, on that same mountain, are being exploited as fast as circumstances will permit, and this coming season should make a busy time for the Hall Mines smelter. Indeed the whole district is making rapid strides to the front, and with the advent of the Crow's Nest railway, and others already projected and likely to materialize in the immediate future, it looks as if Nelson will be by no

means the poorest camp in West Kootenay. One particularly promising group of claims known as the Last Chance Group, on Toad mountain, will be very thoroughly tested this summer; the principal owners, Messrs. Wilson Bros., having already sent a force of men up to make trails and build shacks so as to lose no time when the snow is so far gone as to permit of thorough prospecting. A very powerful English company is behind it all, and no effort will be neglected to prove up the value of the ground in the most systematic way this summer. What will eventually be discovered on the claims (some six in number) it is difficult to say, but at present there is a very fine showing of large bodies of copper pyrites, carrying both gold and silver, which, if permanent, will make this an exceedingly valuable acquisition to the wealth of the district.

It is unfortunate that the study of mineralogy is so neglected in B. C. Over and over again utterly worthless samples of micaceous rock, or some heavy dark variety of hornblende, are brought in for examination, while iron pyrites, a little discoloured by oxidation, is tenderly wrapped up in many coverings and produced as "peacock copper."

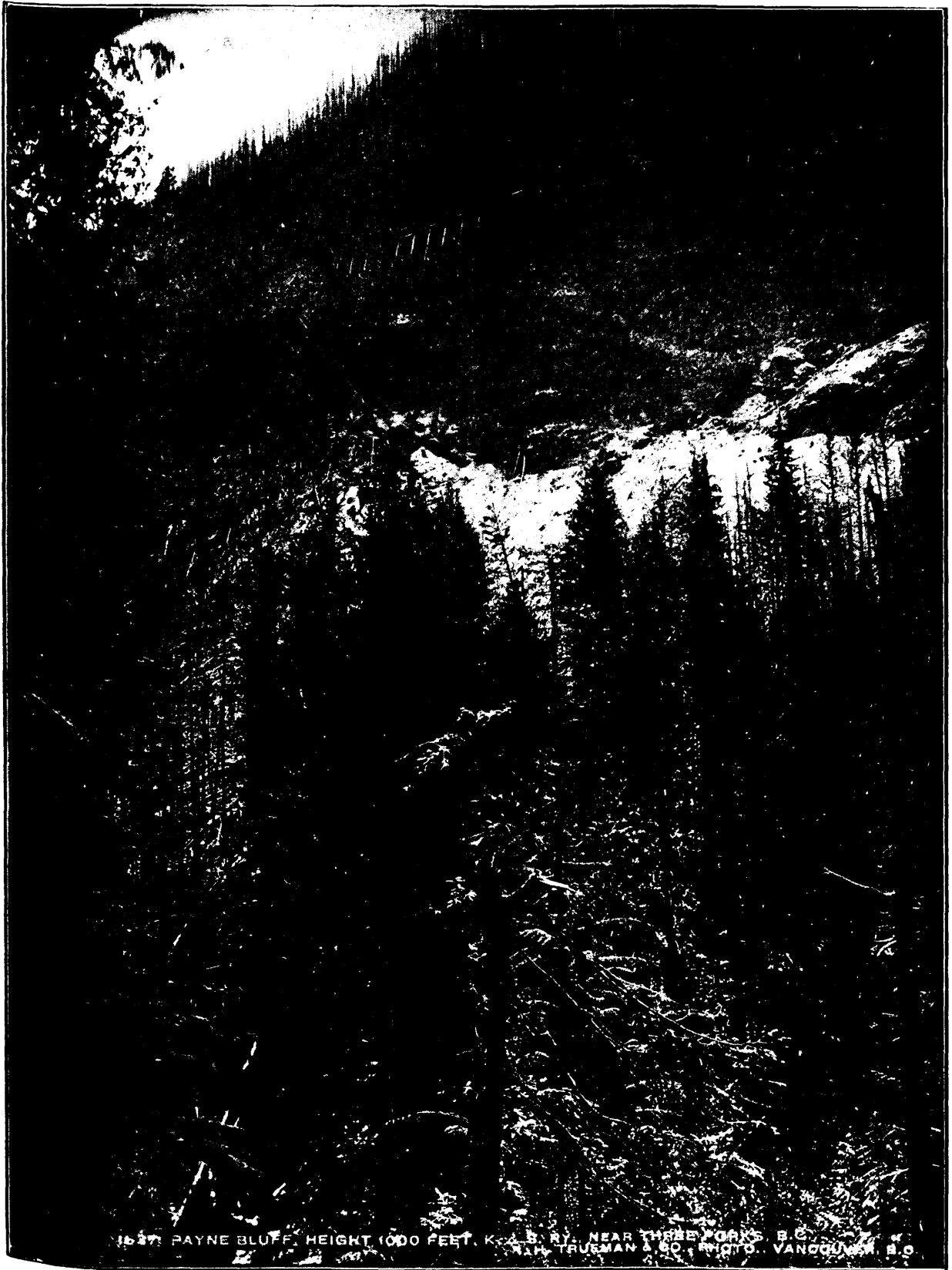
It fell to your correspondent's lot recently, to examine a heavy yellow sample of mineral. Lead, silver and gold, were what the locator expected, and finding all were conspicuous by their absence no further time or trouble was expended on the claim. This winter, however, when assayers have a little (too much) leisure, an examination proved this mineral to be that form of tungsten known as scheelite, but mixed with considerable extraneous quartz. An analysis gave tungstic acid, 74.3 per cent.; lime, 13.7 per cent.; insoluble, 7.0 per cent, and as on Mr. Carlyle's authority that mineral has not been found before in B. C., the matter is worthy of mention in the RECORD. Can any of your numerous readers say if there is any market value to such a mineral, and if so, where?

A. H. H.

FROM FAIRVIEW.

WORK on the Fairview Gold Mines Company's property, (the Joe Dandy), is being steadily carried on. Most of the machinery for the stamp mill has now arrived, and the building is about completed. The mill-site is on the bank of the Okanagan River, about two miles from the "Joe Dandy" mine, and at a considerably lower elevation. There has been far more development work done on this property than on any other in the camp. The figures are, as closely as I can get them, about 1,800 feet of tunneling, and 700 feet of shafts, and this is over and above a considerable amount of stoping. There is a large dump of good ore awaiting milling, and we hope now that as soon as everything is in running order, the Company will reap a reward for the steady work it has put into the development of the mine.

The Smuggler Gold Mining Company has just sold a large block of stock, the proceeds of which will enable the Company to prosecute development work on a larger scale than heretofore, besides providing the necessary funds for the erection of a much needed stamp mill. I learn that the report of the examination of this mine by the mining expert sent out by the shareholders was most favourable, and that he advised the erection of a forty stamp mill at once. Work on the Stemwinder mine has been temporarily abandoned, owing to water troubles, and I understand



1627 PAYNE BLUFF, HEIGHT 1000 FEET. K. & B. RY., NEAR THREE WOKS, B.C.
W. H. TRUEMAN & CO. PHOTO. VANCOUVER, B.C.

THE PAYNE BLUFF, NEAR SANDON, B.C.

that until pumps and compressor drills can be got into working order, nothing more will be done with the property.

Messrs. Dier, Davidson & Russell have expressed their intention of putting 100,000 shares of their private Tinhorn stock on the market at par, for the purpose of equipping the Tinhorn mine with compressor drills. At present the Tinhorn is shut down.

The snow is gradually leaving the hills under the influence of the bright sunny weather we are now enjoying, and very soon the country will be open to the prospector.

Fairview, in common with every other town, has had a partial exodus to Klondike, but there still remains a goodly number of persons possessing faith in the potential possibilities of Fairview Camp.

The Hotel Fairview is now in running order, and is much appreciated by the visitors to our camp.

An English Company, under the name of the Dominion, Fairview & Golden Klondike Syndicate, has just been floated, to take over and develop five claims lying in Camp Fairview and on Kruger Mountain, and to purchase other properties in the vicinity.

RICARDO.

BURNT BASIN.

A NEW AND PROMISING CAMP.

A MINERAL district whereof little has been heard but which gives promise of springing into prominence this year, owing to the fact that it will be traversed by the line to be built from Robson to Boundary Creek, is the Burnt Basin country, lying to the east of Christina Lake, or, to be more accurate, situated 10 miles north-east of the mouth of McRae Creek (at English Point), and about 2,000 feet above the lake level. The survey lines of the Columbia and Western and the C.P.R. both pass within half a mile of the east end of this mineral zone, so that the camp will eventually have excellent transportation facilities, as it will lie between the railway line and the lake. The natural route into this district, and the only one at present used by prospectors, is up McRae Creek from English Point for a distance of six miles by a good trail, and then up a small tributary named Josh Creek. The Burnt Basin is about three miles square, and consists of a very rocky undulating plateau, evidently of volcanic origin and very strongly mineralized. The timber here has been almost entirely burnt off, the first destruction occurring during the big bush fires of 1893. This region was first prospected in 1896, when the claims forming the Edison and Bryan groups were located. At the present time the district is staked from end to end, and it would be very difficult to find vacant ground. The veins appear to lie principally between diorite and porphyry contacts, but the general formation is still a matter of conjecture, as it appears to be considerably broken up in places. In many portions conical shaped mounds exist, which are mostly composed of well-mineralized rock. The veins, where in place, vary in width from five to one hundred and fifty feet on the surface, the ledge matter being chiefly pyrrhotite ore. Various kinds of quartz and galena and copper ores have been discovered, the surface values averaging well. Assays of gold copper ore have run as

high as \$30 and even \$70 in gold, and ten per cent. copper, and assays of galena leads have returned values as high as \$77. Some exceptionally promising white quartz carrying native copper has also been discovered.

More or less extensive exploration work has been done on the Bryan, Edison, Solid Gold and Mystery claims, but so far, though the results have been satisfactory, not sufficient development has been accomplished to prove the permanency of the leads. It may be expected, however, that there will be much activity in the district this season.

CON CENTRATE.

A NEW SHORT BEAM ASSAY BALANCE.

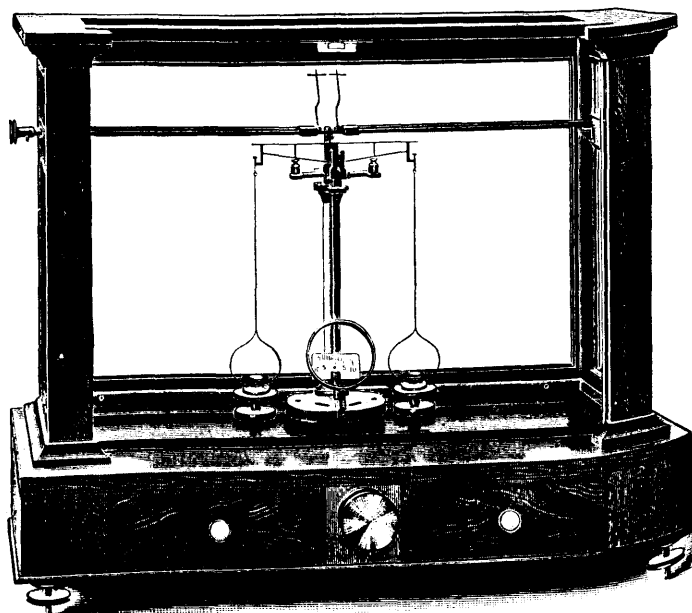
TO meet the constantly increasing demand for more accurate and rapid assay balance, Wm. Ainsworth, of Denver, Colo., is now making a balance shown in the accompanying illustration, which has so far proven equal to the most exacting conditions and severe service.

The balance is sensible to 1-200 milligramme and at this increased accuracy, weighings can be made in from one-fourth to one-sixth of the time of those made on any long beam balance. It can also be adjusted to weigh to 1-400 milligramme when extreme accuracy is alone sought for.

In making a balance of this accuracy it is evident that too much care cannot be taken in adjusting and dividing the beam, and, therefore the construction of the beam of this balance has necessitated the construction and use of more accurate and improved machinery and test instruments than have been heretofore used.

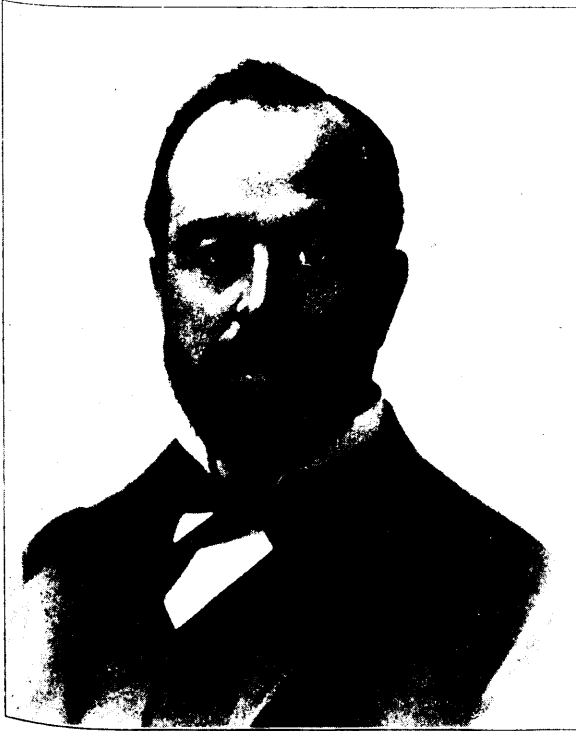
For adjusting the beam to equilibrium there is placed upon the centre edge, back of the beam, a star wheel on a finely threaded arbour; by moving the wheel backward or forward, it is moved along the arbour and thus makes this adjustment. The position of this adjusting device, back of the beam, allows the rider to be used over the centre of the beam.

The new skeleton hanger used on this balance has been designed with the view of making it as light as possible and still maintain the required strength. It also has the advantage to be gained by having a single



point in contact with the pan rest, which greatly eliminates its liability of sticking to the pan rest and causing the beam to throw to one side or the other. The counterpoised sliding door has been removed to better illustrate the working parts of the balance.

A catalogue fully describing this and other balances manufactured by Wm. Ainsworth can be had upon application to MacFarlane & Co., of Vancouver, the sole agents for British Columbia.



THE LATE HON. CHIEF JUSTICE DAVIE.

(Published by kind permission of the *Colonist*.)

THE death occurred at Victoria on the 7th inst., of the Hon. Theodore Davie, Chief Justice of British Columbia. Deceased was born in England in 1852, and immigrated to this Province at the age of fifteen. After joining in the rush to Cassiar in the gold excitement of the late seventies, he entered the field of provincial politics as member for Victoria City in 1882, his commanding talents and strong personality soon gaining for him a position of influence, and ten years later he became premier upon the death of the Hon. John Robson. In this capacity Mr. Davie's abilities as a political leader were displayed to great advantage, and his indomitable will and determination of character stood him in good stead in surmounting the obstacles and difficulties with which he was confronted while administering the affairs of the country during a somewhat stormy period. Two years ago he forsook politics, to succeed the late Sir Matthew Baillie Begbie on the Supreme Court bench, and what would have been undoubtedly a distinguished judicial career was suddenly cut short by death, at the comparatively early age of 46 years.

SOUTH KOOTENAY HAPPENINGS.

AN agitation has been started among the lead miners for an increased duty on lead products imported into Canada from the United States. The object is to encourage lead smelting here, and is a very laudable one.

At present, lead in the form of ore is admitted into the United States at a duty of 1½ cents per lb. while lead in pigs or in what is called bullion is charged 2½ cents. The difference has for the time killed lead smelting in

One View of the Lead Smelting Question. Kootenay. At present Canada consumes about 7,500 tons of pig lead and 20,000 tons of lead products annually, all of which is imported from the United States. Much of it comes originally from Mexico, where the cheap labour enables the lead miners to pay large freight charges into the States. The present movement is to get such a duty placed upon lead products as will enable Canada to manufacture them for herself out of her own raw material. The idea is a crude one, but seeing that all the lead miners of Kootenay are citizens of the United States, they naturally fly to tariff protection to help them when they are in a corner, apparently hoping that Canadians will not see that in order to help these good gentlemen they are being asked to raise the price of lead and its products all over the country.

The obvious way out of the trouble is either to seize some opportunity to get the Americans to remove their objectionable tax, or else go into the business trusting to the patriotism of Canadians to buy their own product instead of that which comes from across the line.

Associated Gold Mines of B. C. A good deal of interest is being taken in two articles that have recently appeared respectively in the *Illustrated London News* and in the *Sporting Dramatic*. These articles are by a man named Aubrey, who appears to be little conversant with his subject, and are descriptions of the mineral resources of B. C. taken largely from official reports. They occupy two pages and, being profusely illustrated, are extremely prominent. They are, however, nothing more or less than a kind of prospectus of the Associated Gold Mines of B. C. This company, according to these articles, possess 96 mineral properties all adjacent to others "which have yielded and are continuing to yield enormous wealth." As they are scattered all over the Province, from Texada island to East Kootenay, the above description would be good news if it were true. But, unfortunately, though many of them are in districts of which the promise only awaits means of transport for its fulfilment, it cannot be said that they are yielding enormous wealth. The fact is the promoters of this company have secured 96 prospects, some of which are in the neighbourhood of such good-looking properties as the Silver Cup and the Waverly, while others are in good localities in East Kootenay, but there is not one in Trail Creek, in the Nelson country or in the Slocan proper. It must be remembered that a claim may be right up against a great mine like the Silver King and yet be absolutely worthless, unless it is on the line of the lead.

Smelting at Trail. The Canadian Pacific Railway have announced that they will smelt Rossland ores at their Trail smelter, at the low figure of \$7.50 per ton for freight and treatment.

That amounts to a reduction of nearly 50 per cent. on the old prices. Already a contract has been entered into with the War Eagle and it is announced in the local papers that some seven or eight other mines are preparing to ship at once.

The contract for the three-mile bridge across the Kootenay for the Crow's Nest Pass line has been let to Mr. Armstrong and work will commence at once. The line will be through to the lake by September, at least the contractors say that it will.

A Mr. Durant has arrived at Rossland to take charge of the affairs of the B. A. C. He is a very great man according to his own account as stated to an interviewer of the *Rossland Miner*, and is distinguished by the possession of a large silver cigar case.

PICK.

OUR LONDON LETTER.

TO judge from the Canadian papers, Mr. Editor, the Klondike fever seems to have fastened itself upon you all with the tenacity of gout. I only trust that it will not prove so painful to the majority of you, and that the good fortune of the adventurers may so suffice that the disease does not become hereditary, such as are the aches and pains said to be derived from too much port drinking. At the same time it is not a little curious to note how universal the fever has become, and how many places seem to supply their remedy. More strange indeed, is it that every disputed point which has a slice of internationalism about it, professes to be girt with streaks of gold. Yankees are making the Russians green with anger at the thought of having sold Alaska for a million pounds, a land more golden than the sun itself. At least so the tall talkers would lead us to believe. Klondike to it is but a mere reflection given by the moon. West Africa is now seeking for a boom, and Mr. Irving, a prominent merchant, declared at the Liverpool Chamber of Commerce, that the richness of the Gold Coast mines was not yet realized, and he had reason to know that whereas the richest yield in the Transvaal did not exceed twelve dwts. per ton, the Wassau workings in the Gold Coast had produced thirty dwts. for the same. Mr. Rhodes, whom we are glad to hear is in better health, has, however, a word or two to say on this point. Speaking about Rhodesia he remarked:

RICHNESS OF THE GOLD COAST.

"You will find no gold producing country, not even West Australia or California, where gold is so widely distributed as it is here, which possesses some parts which are exceptionally rich in that metal. And, considering our area, we believe we shall succeed in proving such parts here as shall, at any rate, equal in result those of either West Australia or California." British Columbia is too much of an infant for Mr. Rhodes as yet to draw a comparison between it and his pet incubator. Still perhaps you will agree with him at his neat little thrust at the English speculator, whom he declares to be a ready philanthropist—when he can be sure of five per cent! Well, I am not in that line myself, but I do not blame the man for being cautious.

China is another quarter in which gold is represented to be in plenty. Assuredly a most appropriate find, now that the Celestial Empire has given permission to open up all river courses to trade in 1899. This is quite a revolution on the part of the country which has been to sleep for a millenium, and is now awake to try and imitate the actors of the present age. The advantage is likely to be shared by its inhabitants as much as by the European traders. The question for us is, which country will gain the greatest advantage first of all. I strongly suspect Russia, whose latest game it is said has been to be the lessee of Deer Island, which is open at all times of the year, and is the nearest outpost looking towards Japan. However, the credit of finding the gold from the inland of China belongs to two English travellers. They say that the metal can be found in considerable quantities, and is

easily procurable, in fact, the companions were able to scrape together many thousand dollars' worth of gold with the most primitive appliances. I have no concern in all this, as I have no opportunity for gold gleaning, but it does seem to me a moot point whether all these fresh discoveries will not settle the knotty question of bimetallism without further trouble.

THE RUSH FROM ENGLAND.

This, however, does not happen to be the chief consideration of those who study the question of finance at the present moment with a view to increasing the size of their purses. I understand that the rush from England is likely to surpass any previous calculation. At the head London Office of the C.P.R. they state that they are receiving letters amounting to a hundred and thirty every day, asking for information, which will probably lead to almost as large a demand for booking. Mr. Byron Johnson, the chairman of the B.C. Development Association, has published a word of advice in time. He warned emigrants not to start too early, but to so time themselves as to be prepared to leave Vancouver or Victoria in the beginning of May. If they start before then they will waste their patience and resources at one of those terminal towns, or at far more unpleasant and expensive places, en route. This is sly flattery, "damned with faint praise." In conclusion he adds: "A rush before the rivers are open can only lead to sad disappointment, and possibly catastrophe."

There are many, however, who will not listen to reason, and who will turn towards such cold precaution as offered by the *Financial Times* with the utmost scorn, notwithstanding all its wholesome, if unsavoury remarks:

THE "FINANCIAL TIMES" APPLIES COLD WATER.

"Let the diggings in the Yukon and other districts of Northwestern Canada be as rich as they may," it urges, "it is certain that most of those who go there to seek gold will find only disappointment, and will drift back to the more civilized portions of the country—if they are even so fortunate—poorer, though mayhap wiser, men. The proportion of prospectors the world over who become rich is extremely small, and this is a fact which the would-be Klondiker, who probably knows nothing even of the business of prospecting, should weigh well. If, however, he be hardy and strong, has four or five hundred pounds to lay out and a love of adventure, he might make a worse use of his time than in spending a couple of years in the Yukon and kindred districts."

To those who insist on going the following advice is given: Attach yourself to a party which contains at least one man with some experience of prospecting and mining. Leave purchases until Victoria is reached. Do not carry a portable arsenal, one rifle and one shotgun to each four of a party would be sufficient. Go straight to Dawson City, the centre of information as to new finds; if not, then take the route via Edmonton. [This by the way, is of course a bad slip, as the Canadian route is not feasible.] Finally, shun in Canada down-at-the-heel fellow-countrymen, and shifty, glib-tongued strangers as if they had the plague. When advice is wanted, go to established business men or public officials, who will be found in most cases glad to help any honest looking fellow who knows how to be civil.

To the same paper an English trader has sent a letter in respect of the probabilities of trading. He writes:

"Doubtless trading during a gold-mining rush is a surer means of profit than gold-seeking itself as a general rule. But in the present instance there is one factor that puts private enterprise at a disadvantage. The field is already occupied by old, experienced, thoroughly equipped and strong firms such as the Hudson Bay Company, Alaska Commercial Company,

and one or two private firms which have had trading posts in the north for many years. Also, there are new and very strong companies established for mining, trading and transportation enterprises in the Yukon country. Freights are very high, and likely to disable small traders who cannot charter their own steamers or land transporting outfits, or who have not sufficiently large cargoes to command good terms. At present one would have to get one's supplies for trading in by the ocean route and Yukon to Dawson. Later, when regular transportation facilities, perhaps a railway, are established via the Stickeen to Teslin Lake, one could import by that route."

C.P.R. SHARES.

This travelling mentor is also an adept at giving good advice, which is certain to be the more reliable since he has not himself followed it, thus accepting Rochefoucauld's cynicism, "Nothing is given so profusely as good advice" "The average Englishman, no matter how well educated," remarks the writer, "unless he has a useful trade or profession, is about the most u-eless and helpless creature in the country. All we are good for is to go on the land, and that requires capital, or years of a common labourer's life." With regard to Rossland and Kootenay he holds out no better prospects, indeed it would seem that at every corner there lurks a blackmailer of a sort. Speculation, pegging out imaginary claims and selling bogus mines to English tenderfeet, appears to be the only sure road to success. Continuing he adds that it is not a poor man's country, and to some extent only, a capitalist's. "There has been more money sunk and lost in those regions than will come out for many years." But Mr. Kenneth Farington Bellairs sends out a more glowing description of Rossland. He, at any rate, is full of hope, though his wants will be easily satisfied seeing that he does not require more than a horse, a dog and a rifle—three excellent virtues, which no man should be without. He has set up a "brand new restaurant or boarding house" for miners at Rossland, and he is going to act as the matron—or patron is it?—to chubby faced Englishmen who will put their confidence in him and his luxuries. The *Financial News* has a good deal to say about this kind-hearted soul, and concludes, "Mr. Bellairs wants financial support, and he insists upon a free hand, for his clients must follow him blind." For those who like this sort of an advertisement, it is just the sort of an investment that would please them, and we cannot say fairer than that.

THE TENDERFOOT BRITISHER IN KOOTENAY.

But the next question at issue is, how are we to reach the Land of Promise? This is a matter of concern to thousands who have no intention of going a step nearer to Victoria than their front door-step. Early in February the shares of "Can. Pacs." were eagerly sought after, and extraordinary prices were offered. There were a few persons who cautioned speculators against this hubbly, but investors were precipitate, they bought, they kept their bonds, and now they tremble at the war of rates between the C.P.R. and the Grand Trunk and others on the matter of differential rates. For my own part I fail to see why the C.P.R. should be so highly favoured. All railway lines have a commencement, and the chance of providing a dividend must necessarily be uphill work. Besides it is not in the nature of companies to say to another one that as it is anxious to secure a profit they will for the time being keep up their prices so as to induce their customers to travel by the other line. Unless the directors themselves had been applied, this generous submission would, to say the

least of it, scarcely meet with the approval of the shareholders. The C.P.R., therefore, cannot expect to have the monopoly of the Klondike trade, and we believe that a speedy settlement would be to the mutual advantage of all the cross-country runners. C.P.R.s fell as much as eight points during the trouble, but the outlook now promises to be far more fair. That is as it should be, for otherwise I think one could do quite a neat little business in buying up a number of railway tickets postdated, and selling them again after the trouble has been concluded. Unfortunately, this finessing requires time and personal knowledge of those who intend to go westwards. Alas and alack, the trouble about the all-Canadian route promises to be much more serious. It was said that its success would breed a spirit of competition, and would at one stroke have extended the scope of the boom from the little valley of the Klondike over all the Yukon district and Northern B.C. Now we are told that the track is in no small degree dependent on American favour, which means in so many words that we are in for a nasty tackling. Had the Washington treaty contained a clause allowing for a transshipment of goods to river steamers at the mouth of the Stickeen River, this trouble would not have overhung us. On this knotty point a correspondent to the *Pall Mall Gazette* remarks:

In view of the fact that troops and police cannot be taken in *via* the Stickeen, and also that the usefulness of that route is at the mercy of the American Government, it is likely that the route of the Yukon railway will be altered. The new line will be an extension of the one first projected, and will run southward to Port Simpson, a point on the British Columbia coast. Such a line would be entirely on British soil, but it cannot be completed until September, 1899; and therefore next summer's trade will be largely captured by Americans.

What are the prospects when the field is reached? Captain Yates declares that is dangerous taking dogs because the smell of that animal possesses an irresistible fascination for those "bloodthirsty imps." Even dogskin gloves are enough to please mosquitoes. Then from New York, mark the place. Robberies are said to be so frequent in Dawson City that everyone is in a state of terror. It also urges the promotion of a newspaper to stop thievery! Better accounts are given to us in book form by Mr. Dyer, who believes that the proud and promising Dominion will find its greatest source of wealth in the sub-arctic regions. If rich quartz reefs are found, the district will be permanently inhabited. Summarizing the outlook, he adds, "The future of B.N.A. is a fascinating problem to speculate upon; the only danger being that the more one studies the indications of its enormous resources, the more boundless become its possibilities. Its agricultural, lumber and fishery resources are rich and promising indeed; but when its future mineral development is added, the vista widens out beyond all human calculation."

As regards the information in respect of companies, the Hon. C. H. Mackintosh seems to be proving himself more astute in directing the affairs of a company than a country. On behalf of the British American Corporation, he has snapped up what are said to be some of the better mines around Rossland.

NEW ISSUES.

Several new companies have been started; and Mr. de Windt has followed up his literary energy by forming a company which will be his namesake. As it was issued on Valentine's Day, should it fail to profit it will always commend itself as a venture of love.

Good names have been secured to act as directors, amongst whom are the Earl of Lonsdale, Colonel Cheape of the Edinburgh North American Investment, and Mr. J. R. Murray, who assists in the direction of the Oceana Consolidated Company. The objects of the company strike me as rather peculiar, namely, in addition to working gold mines, of generally "turning to practical profit the experience gained by Mr. Harry de Windt in his exploration of these districts." And this after the aforesaid gentleman has repeatedly told to an English audience that a large part of his time was spent in eating bear's grease among the Mongolians! But there is more than that; stores and trading businesses are to be carried on, hotels and boarding accommodation are to be provided for the "enormously increasing population," which represented zero barring a few Indians when Mr. de Windt first visited the country, so that it is easy to declare an enormous increase. Trading posts are to be established at Glenora, Teslin Lake, Fort Selkirk, Sixty Mile Creek and Dawson City. The company is also to take over from the Explorers and Travelers, Limited, meaning Mr. de Windt himself and one or two others, certain gold placer properties in Eldorado, Bonanza and Hunker's Creeks; the site of a wharf, warehouse and hotel now in course of construction at Fort Wrangel; and certain water rights for domestic and manufacturing purposes in the immediate neighbourhood. In this last item, the Company claim to have a monopoly of all the water that would be used by the town for "the site you have acquired to be the only feasible one for bringing in water under the gravity system." Regarding this prospectus, the *Daily Chronicle*, with its customary pessimism concerning matters British Columbian, remarks: "This is purely a mining and exploration speculation, and though the particular properties to be acquired are attractively named, there is nothing in the prospectus to show that they are worth the £140,000. It is apparently a question of confidence in Mr. de Windt's judgment." This journal could have commented in this strain with more assurance upon the Klondyke Pioneer Syndicate. The board consisted of three members, and the capital of seven shillings and sixpence, including the machinery and stores containing an unloaded revolver, a soap box mounted on wheels, stocked with jam, potatoes, a saw and tarred sheets and such like. Unfortunately, before these directors could hail a fishing smack to take them across the Atlantic, maternal smacks were applied and had a dispiriting effect on the company speedily going into liquidation.

THE WHITEWATER MINES.

The Whitewater Mines poses as a much larger concern, and cannot be treated with the same levity. With a capital of a quarter of a million pounds, about two thirds were offered to the public by the London & B. C. Goldfields L'td. Two of the sponsor's directors are on the board, namely, Mr. H. W. Forster, M. P., and Mr. A. J. Douglas. Mr. A. C. Mitchell Innes, of the B. C. Electric Railway Co., finds a fourth place. Mr. J. D. Kendall has reported that an output of twenty-five tons per day of \$50 ore can be obtained at a working cost of \$16 per ton. Taking 300 working days to the year, this works out to over £50,000 per year profit. On this matter, the same journal above says:

"It is purely a mining venture, and how long the mine will last being worked at the present rate is not stated in the report; and we should imagine that a

long life cannot be predicted for the mine, or else the company which is selling it would hardly part with a property which they state is earning £1,000 sterling per month net profit, or at the rate of £84,000 a year for so comparatively small a sum as £110,000—less than eighteen months' purchase."

The Klondyke Hydraulic Company, Limited, has been formed, with a capital as large as £310,000 to acquire and work three placer claims of twenty acres each, located in the celebrated K. district, on Bonanza Creek, about one hundred miles by water and about twenty-five miles by trail over the mountain from Circle City. The claims are known as the Willow No. 1, 2, and 3 respectively. "A careful record of all the tests made of the gravel during prospecting operations leads to the conclusion that it will average half an ounce to the cubic yard for the entire sixty acres." Moreover, it is stated that £66,000 will be all ready for shipment on the opening of navigation.

In order to extract the phenomenal quantity of gold contained in these claims in the shortest possible time, it is proposed to erect an hydraulic pump on the property capable of washing 4,000 cubic yards per day during the four summer months in which it is possible to work by this method.

The water, amounting to 20,000 miners' inches, can be brought by pipe line from about five miles, from the Black River, under a 300 foot head.

It is estimated that with the proposed plant about two tons of gold per month can be produced during the four summer months, or £300,000 for the season.

But whence all this haste? If the mine is going to reveal its walls of gold, why are the present promoters in such a hurry to share their loaf with hungry strangers? These are some words of caution on the subject, the difficulty of working the hydraulic process in such a climate; the difficulty of effective control and security against robbery by employees, the difficulty of safe transport when every second ship seems wrecked on its way to or from Vancouver.

With the modest capital of fifty thousand pounds the Yukon & Stickeen River Trading & Transportation Co., Ltd., intends to establish through transportation service from Fort Wrangel to Teslin Lake, through the Cassiar and Upper Yukon districts. It aspires to a net profit by the first of November of £20,000, but it will have yet to settle its peace with the Americans if it looks for so large a return.

NUMMUS.

A comparison of the state of affairs at Skagway and at Dawson City is anything but favourable to Yankee administration of law and order. In Dawson City, under British rule, a new mining camp, composed of a heterogeneous mingle of representatives from half the nations of the globe, is kept in order by a few police; and life and property are as secure there as in Victoria; indeed, more so, for they have neither aldermen nor Point Ellice bridges. In Skagway, on the other hand, crime and murder stalk abroad unpunished, and a United States officer is wildly imploring his government to send him a few battalions (!) of infantry to enable him to keep some semblance of order among the miscellaneous brood of tin-horn gamblers, murderers and disreputable characters of all sorts who appear to consider that wherever the Star and Stripes fly, there they are free to ply their trades unchecked. And all this demand for soldiers is not because of a riot, mind you. There is no popular commotion. It is simply because soldiers are required to undertake the duty that the United States police have, in every large city, been too venal and too cowardly to perform.

It is very much to be hoped that the Provincial government will not entertain the suggestion that Crown grants be issued for placer ground. This would certainly result in the tying-up of the country by rapacious speculators to the detriment of legitimate mining. That a serious mistake has been committed by the Crown in parting with the rights in British Columbia to the precious minerals contained in lode mines might form the subject of a very interesting debate.

Representatives of the prominent firms of Welsh smelter industrialists, the Vivians and Elliotts, are now visiting the Province with the view, it is alleged, of ascertaining the business opportunities for establishing and operating local smelting works on the Pacific coast. While the time is hardly yet ripe, perhaps, for enterprise of this nature to be profitably conducted, the active development during recent months in the mines of the Coast and Island districts has demonstrated the existence of valuable and extensive ore-bodies, and it may be that the prospects are sufficiently good to warrant the representatives of Messrs. Vivian & Elliott in making preliminary arrangements for the establishment of a smelter at Vancouver or at some other desirable centre. Meanwhile the evident anxiety of such important people as the Vivians to secure a foothold in B. C. is a most gratifying sign of the times.

We have to acknowledge receipt from Mr. John A. Turner, president, and Mr. Frank Fletcher, acting secretary of the South Kootenay Board of Trade, of a copy of a resolution passed at a meeting of the Board on the 10th inst., favoring Mr. Corbin's application for a charter to construct a railway into the Boundary Creek district. The resolution voices the opinion of the majority of the residents of the interior.

A London correspondent informs us of the arrival of Messrs. Mackintosh and Ogilvie in the metropolis, and states that already interest in the Yukon has been considerably revived by Mr. Ogilvie's optimistic public utterances. This, we fear, will result in another lot of Klondike wild cats, but it should be remembered that Mr. Ogilvie, though an honest and well-meaning man, is by profession a surveyor and not a geologist or mining expert.

The *Financial News*, of London, England, publishes in a report of an interview with Mr. Wm. Ogilvie, the famous Yukon explorer, some extraordinary statements, which are probably due to mistakes on the part of the interviewer. Thus, Mr. Ogilvie is made to say that there are 7,000,000 miles of territory in the Yukon, when the whole area of Canada is less than half that immense square mileage, if the great lakes and rivers be excluded from calculation. In fact, if these be left out of consideration—as these should be—parts of the Yukon within the Arctic circle or otherwise absolutely incapable of mining exploration by reason of physical or climatic difficulties, it will be found that the possible gold-yielding territory of the Yukon cannot exceed an area of between 100,000 and 200,000 square miles—a large enough region assuredly to occupy years in exploring and exploiting under the stern natural conditions of the country.

It would also appear as though Mr. Ogilvie's estimate of gold "in sight" has been similarly exagger-

ated by the interviewer, as he is made to speak of "£20,000,000, or \$96,000,000, in sight to-day," whilst previous utterances of his in British Columbia and Ottawa have indicated that whilst Mr. Ogilvie believes that the auriferous creeks of the Yukon may be found capable of yielding at least \$70,000,000 in gold, the getting of it must occupy the best part of a decade. Such deposits cannot therefore, without danger of misleading the ordinary English public, be described as gold ore in sight.

The directors of the British America Corporation have very wisely ratified the agreement made by Mr. MacIntosh with Mr. Carlyle, who now enters the company service as consulting engineer with full powers to act.

Mr. Whittaker Wright, the principal promoter of the British American Corporation, is undoubtedly one of the great financiers of the day. According to the statement of a writer on the "genealogy of finance" in a London contemporary this gentleman has successfully launched no fewer than twenty-six companies, aggregating a capitalization of 11¼ million pounds sterling. It would be still more interesting to learn what sum represents the profits of company promoting on this stupendous scale.

A Cariboo company have decided to "import" miners from California to carry on the work of shaft sinking through gravel and clay on their property at Horsefly. For this class of work it is claimed that Californians are the most expert in the world.

In British Columbia a very large proportion of the silver coin in circulation is United States currency. There would not be so much objection to this if Canadian silver coin, at its face value, were accepted in American territory but this is not the case, discount being invariably demanded by the U. S. banks and business establishments. Some time since the Provincial banks advertised a discount charge on United States coin, but this rule was not enforced probably because the amount of Canadian silver in circulation in the Province was found to be insufficient for commercial requirements, a state of affairs for which the Dominion government is chargeable. It is to be hoped that the agitation in favour of a Canadian mint will not be allowed to subside.

Many of those who were present at the departure of the steamship *Islander* this month on her trip north had occasion to remark anent the fine breed of dogs the Klondykers were taking with them. A large number of the canines, instead of being the miserable specimens of "tramp" curs formerly seen, picked at random off the streets of inland provincial towns, were of the genuine Esquimaux breed (more generally known as "huskies"). These animals alone of their species can stand the cold and privations of the far north. Their only serious fault is a habit of assimilating their owners when provisions fail. This, however, we are informed, can be cured by eating them first, directly in fact, this evil trait in their character displays itself.

WHITEWATER MINES.

ANY conscientious effort made by the London financial press to put down wild-cattling, over-capitalization and other evils in connection with the promotion of British Columbia companies in England is thoroughly appreciated on this side of the water; but there are criticisms and criticisms, and due care should be exercised to discriminate between the palpable swindle and the honest venture. The *Shareholder*, for instance, has done excellent work in showing up the very numerous Yukon "fake" schemes which have been foisted upon the public during the past few months, but when this journal places the "Whitewater Mines" in the same class, it falls into a very serious error. Our London contemporary thus comments on this recent flotation:

The capital of the company is £125,000 in shares of £1 each, of which 87,000 are offered for subscription. It is stated that the working capital to be provided from this issue is £15,000. "By a special examination," says the prospectus, "of the mine accounts made by a firm of independent accountants, it has been found that the net profits produced by the Whitewater Mine during the four months ending December 31st, 1897, amounted to \$136,907, which averages \$34,226, or more than £7,000 profit per month." That is to say, a mine which is making £7,000 per month is floated for £125,000 in order to provide it with a working capital of £15,000. That such a splendid property should be sold for so small a price is nothing more nor less than pure philanthropy on the part of the promoters. But such philanthropy is not calculated to catch the average investor.

The notice of Mr. J. D. Kendall, consulting engineer and resident partner in Vancouver of the well known firm of Bewick, Moreing & Co., was drawn to the *Shareholder's* criticism, and we publish his remarks thereon in this column in full, with the object of emphasizing more particularly the fact that the engineer, not the promoter, determines the capitalization of a mining company, and the investing public therefore have this opportunity of protection by refusing to support any undertaking unless on the authority of a reputable engineer, the proposed capital is such that a reasonable return therefrom—in addition to redemption—may be more or less confidently anticipated. Mr. Kendall writes to the *MINING RECORD* on this subject, as follows:

"I duly received from you the cutting from the *Shareholder*, re the recently issued prospectus or the Whitewater mines. You ask me if it is a fair criticism. I should say it is rather a fair illustration of a critic's foolishness. The writer of that notice either is quite ignorant of mining, or is so accustomed to seeing properties over-capitalized, that unthinkingly or unknowingly he reaches a conclusion, in this particular instance, which may suit the irony dripping from his pen, but is not justified by the facts. The mine has produced a profit of about £7,000 per month, when no exploratory or development work was going on, but if this Critic had paid more attention to the engineer's reports, and less to the "frills" of the prospectus, he would have learned that thirty-three per cent. was added, to the working cost of the month referred to, in order to cover these two items of necessary expenditure; so that the profits, when exploration and development are proceeding, will, with the same output, be less than the figures certified by the accountant, but a diminished output is also provided for, which, if it should occur, will reduce the profits still further, and may bring them to £5,000 per month, or even less, instead of £7,000, the Critic's favourite and only figure.

There may be some charity, (as the Critic suggests,) in offering a property of this description to the public at a price which is equal to only two years' purchase, but I am bound to confess it is a species of charity which, as an investor, I should ask for every time, not only with regard to B.C. mines, but for all other similar properties in a like state of development. I do not think that any engineer is justified in assuming a longer life for a like mine than such a valuation implies. For what does it mean? Simply that the mine must be worked to

its assumed full capacity for four years before a purchaser has received back his capital, and interest at the rate of 25 per cent. per annum. After thirty-five years' experience in mines of all kinds, and in many parts of the world, I should decline to purchase any property, similar to that now being dealt with, which did not promise to yield the return, above named, on the money to be invested.

The Critic's remarks anent the working capital also shew that he has failed to grasp his subject. The £15,000 to be provided is simply for supplementary purposes (in addition to meeting the ordinary operating expenses.) A considerable amount of working capital has already been expended, or how could a dividend-paying mine have been produced. Mines in this state of development do not grow in B.C. any more than in other parts of the world."

REPREHENSIBLE METHODS.

WHAT connection, official or otherwise, has a Mr. W. H. S. Aubrey, LL.D., with the concern calling itself the "Associated Gold Mines of British Columbia"? This should admit of an interesting reply. But whatever the capacity may be in which he is engaged Mr. W. H. S. Aubrey, LL.D., obviously has a strong interest in booming the company and its properties. He contributes lengthy articles or rather advertisements after the seductive pattern introduced by enterprising patent medicine vendors, to two of the leading London weeklies, the *Illustrated London News* and the *Sporting Dramatic*, of recent date, ostensibly describing the gold fields of the province, but in reality puffing in the most exaggerated manner the mines (?) of the company aforementioned. The article in the *Illustrated London News*, from start to finish, is full of gross errors and grotesque misstatements, and after perusing it one can only conclude that the writer at the best obtained his information second-hand and failed, even then, to take accurate notes.

We are told, for instance, that in southern British Columbia, which, of course, includes the districts of Yale and West and East Kootenay, "snow seldom falls and then it lies only a few hours or days;" that "the mineral lands are open to location by any person having a free miners' license . . . but only one claim of 1,500 feet square . . . can be staked off by one person," etc., etc. These are, however, not very material mistakes, for at least no one is likely to be much injured in consequence of their occurrence, and so long as Mr. Aubrey sticks to generalities he is harmless enough; it is even possible that if he had stuck to generalities and made surer of his facts, the article might have had a certain value as advertising the province in London. But Mr. Aubrey has a more selfish purpose in view. His aim is to boom a company enterprise, and accuracy has been regarded as a matter of secondary importance. Between an extract from the Minister of Mines report for 1896, and a short account of the school system in vogue in the province we find the kernel of the nut—a glowing description of the prospects of the Associated Gold Mines of British Columbia, Lt. This company was incorporated in London on the 14th of January, 1898, with a capital of half a million, to acquire and develop ninety-one of "what are believed to be the most valuable and promising mining properties in the province. It is also intended, on the side, "to carry on the gainful business of trading in machinery, tools, mining implements, food, clothing, and all the necessaries of life and industry, the profits of which are likely to be enormous. (Oh of course; but really this reads more and more like a cheap-Jack prospectus,

and not at all like a descriptive article by a learned "L.L.D.") The writer then remarks that the properties which have been acquired promise to yield extraordinary results and points out that "one important and promising feature is their proximity to mines . . . which have yielded, and are continuing to yield enormous wealth." Mr. Aubrey evidently lays great stress on this fact, for he actually repeats the statement, using precisely the same language half a dozen lines below, instancing, however, in this case, two of these "exceedingly valuable mines which have yielded and are continuing to yield, enormous wealth"—the "Tangier" and the "Silver Cup." The "enormous wealth" produced from the Tangier Mr. Aubrey shows to have been £350, according to an announcement made at the statutory meeting on Feb. 17th, of the result of a shipment of fifteen tons of ore. But the residents of the province have apparently been kept in lamentable ignorance until now of the valuable mine that is being operated in the Trout Lake district under the name of the "Silver Cup," for Mr. Aubrey tells us "it is said to have yielded £10,000 monthly." Why that is running the Le Roi pretty close. Oh, Mr. Aubrey, L.L.D., where, oh where, did you get your information, and are you an honest man, or merely an easily stuffed goose, in spite of your L.L.D.-ship?

The article continues *ad nauseam*, in the same idiotic and exaggerated strain. The folly of it all is that it is so needless, all this boom and misrepresentation, and though, of course, newspapers don't publish this sort of thing for nothing, it is a source of regret that respectable and high-toned journals like the *Illustrated London News*, even for pay, allow, without verifying to some extent, such statements as Mr. Aubrey makes to be published in the very body (not in the advertising columns, mind,) of their publications and thus become responsible for the nefarious attempts to swindle the public. The "Associated Gold Mines of British Columbia, Ltd." may and possibly do own some very promising prospects throughout the country, and its shares may perhaps now or in due course be worth holding. The mining properties the Company owns are evidently in good localities—though this does not count for very much—but the contiguous mines referred to as of "enormous value," have yet to be proved. Why not, Mr. Aubrey, go to the British investor with a plain statement like this? You say, "Look here, my friend, here is a country of very great possibilities. We have acquired such and such a promising claim. Mr. So-and-so, a reputable mining engineer in British Columbia, tells us that the indications are very fair, and here is his report, corroborated by the statements of Mr. Thingumberbob, another prominent expert. You will see that we start with excellent prospects. We are not over-capitalized, so that the chances of profit are tolerably good." Instead of scaring capital away, we submit such a course would produce precisely the contrary effect, and again if the enterprise resulted unluckily, neither the promoters nor British Columbia would come in for that wholesale condemnation which was heard when, not very long since, certain regrettable failures of much-boomed ventures were made known.

Apropos of the foregoing, it is a truly remarkable coincidence that one never, by any chances, sees a British press comment on matters appertaining to provincial mining, without reading something about

the "Waverley," or "Tangier." If an ability and a knowledge of how to pull strings to the best advantage are praiseworthy qualities, Mr. Grant Govan and his associates are to be congratulated thereon. At the same time it is peculiarly fortunate for the province that in spite of all the over-booming, there is some probability of these properties turning out well.

The acting secretary of the British Columbia Chamber of Mines is well pleased with the progress which the movement has made since the recent consolidation of the Chamber. One satisfactory indication is the fact that members' subscriptions are being freely paid, as a result of which the Chamber will shortly begin with a treasury fund of at least \$2,000, representing the subscriptions of about 100 representative members and associate representatives. It is therefore hoped that lack of means will not in this, as in so many other other instances of public institutions, prove an obstacle to successful work. It is understood that the Chamber's board of directors expect that their members' subscriptions will soon reach at least \$5,000 a year, a revenue which should enable them to make an excellent showing for the good of the province's mining interest in general.

Mr. Labouchere's rather successful recent opponent, Mr. Hess, of *African Critic* fame, is not unlikely to have further trouble on his hands. He has lately been making caustic press comments on the career of a well-known ex-African mining man now in Vancouver and considerably interested in British Columbian mines. The latter gentleman, naturally indignant, is understood to have retaliated by acquainting Mr. Labouchere with a number of most interesting and suggestive incidents in the South African career of Mr. Hess. It may be, as a result, that Mr. Labouchere will return to the charge and again make things rather lively for the editor from South Africa. The latter will doubtless in such case respond, when incidents of considerable public interest should ensue. Some, however, think that Mr. Labouchere may have by this time "had enough" of Mr. Hess.

It cannot be said that the Boundary Creek railroad discussion in the Provincial Legislature, and the action taken thereon by Vancouver's representatives, causes any special excitement in the Terminal City, outside C.P.R., Vancouver, Victoria and Eastern railroad circles, and the office of the *Vancouver World*, where Mr. J. C. McLagan and his editor beat the war-drum long and loudly, calling M.P.'s and M.P.P.'s to arms against any grant by the Dominion of railroad charter rights of international connection to Mr. Corbin and his associates. Vancouver is too much occupied with and interested in Klondike trading and Yukon happenings to pay any attention worth mention at the moment, to happenings in the Provincial Legislature.

It is understood that within the next few days an influentially supported application will be made to the Provincial Legislature for a statutory charter, granting large rights of mining exploration, and special facilities for general development on the Queen Charlotte group of islands. If the application should prove successful, ample capital—mainly British—will, it is said, be easily secured by the chartered Company that will in due course be formed in London. Vancouver representatives of British [mining capital are promoting the proposal.

TERMINAL CITY TOPICS.

THE stockholders of the Golden Ears mine at Pitt Lake, who are mainly New Westminster men, are so well pleased by the result of recent test shipments to the Vivian company of Swansea, South Wales, that they have already raised sufficient further capital to place their mine aided by the proceeds of ore gradually gotten out and shipped on a paying basis without any need of either reconstruction or the sale of the property — as at one time half expected to become necessary — to other owners at but a very moderate price for a very promising copper-gold property. The Golden Ear Company is applying for water rights with a view to secure cheap and ample motive power for mine machinery working. So, too, are the joint owners of the neighbouring Seymour property, who also intend actively to develop their claims. The coming season should therefore prove a busy one for the mining district about Pitt Lake.

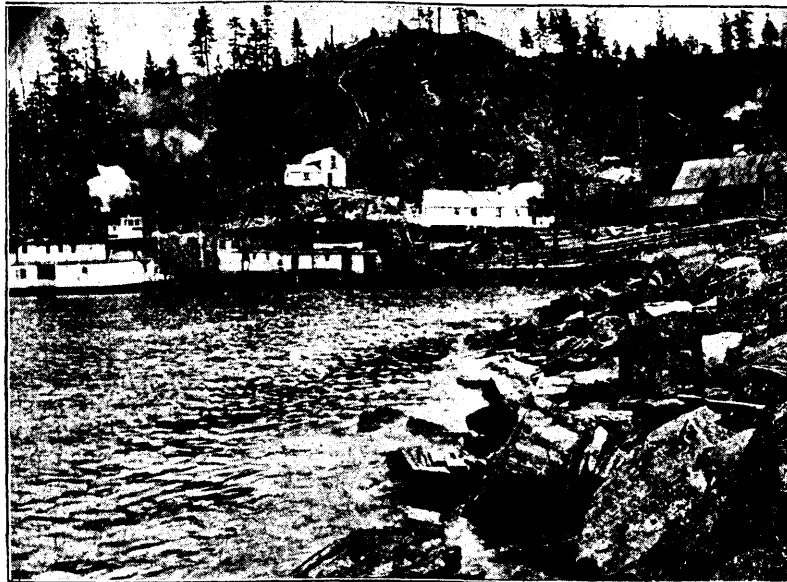
It is freely admitted that the past working of the Coast properties of the Gold Fields of B. C., Limited, has left much to be desired—things being as the new manager states—all in a tangle! Much of the work done has not been on successful lines, but every effort will be made to re-start the development of the properties on a better basis. Meanwhile, pending advices from the directorate in England, only preliminary efforts in this direction have yet been made.

It is understood that those interested in the Golden Cache and other free-milling gold properties of the Lillooet district are just a little disappointed by the very cautious and conservative references to the district and its gold opportunities, made in Mr. Carlyle's just issued annual report on the mines of British Columbia. The Provincial mineralogist is, however, more than justified in the attitude he adopts—even if it be one of considerable reserve, pending full proof of mine property values, as any single incautious utterance of his made "ex-officio," might easily be distorted and misused by some of the unscrupulous company managers who are now hard at work in London, England, endeavouring to float very doubtful undertakings. Meanwhile, the Vancouver men who are interested in the Golden Cache, Alpha Bell, Excelsior and other Lillooet properties believe that with good working satisfactory results will in general be achieved in respect of their undertakings. The action in particular of the Golden Cache company, in appointing in Mr. Wm. Mackinnon a competent man to guarantee the careful and safe construction and equipment of a dam, power-house and other necessary mine buildings and works, is a step in the right di-

rection, since upon the sound construction, further equipment of these adjuncts and their subsequent skillful working on economic lines, the success of the Golden Cache almost wholly depends, as the mine is, in all probability, one of middle grade ore. It is true that recent assays of ore from the ledges run high and average well, but as Mr. Carlyle shows in his remarks upon fire test assays of free-milling gold deposits, these are by no means accurate tests of general value, though they serve to show whether gold is or is not present. However, the Golden Cache people now seem to have traced more fully the lines on which the most promising veins run and everybody hopes for the success of the endeavour as a well-worked middle-grade ore proposition.

The Chamber of Mines is yet in a very inchoate state, though those behind it, who have the time, are working hard to inaugurate it on good and safe lines and subscriptions have, under the circumstances, come in well. The trouble is that those who know most about the working of similar bodies, Mr. Alex. Bonthron,

for example, are such busy men that they can only devote a comparatively small portion of their valuable time to the undertaking. The acting Hon. Secretary, Mr. Taggart, is meanwhile doing all he can in the matter with the aid of Messrs. Pellet-Harvey, Plunket, Bonthron and one or two others, the burden of the endeavour as usual in such cases falling on a few shoulders. It would seem as though it may be necessary for the chamber to secure the services of some organizer



THE BLUE BELL MINE, AINSWORTH, B. C.

who is fully acquainted with the *modus operandi* of other mine chambers such as, for example, those of Westralia and the Rand country of South Africa, in order to start the British Columbia chamber on correct lines. It will, however, take a long time for any new chamber in such a young and undeveloped mine country as British Columbia to elaborate and issue at frequent regular intervals, such detailed and broadly accurate mine output returns and summaries of other connected information, as are issued by the Rand Chamber of Mines.

All here most sincerely hope that there is truth in the report that the Vivian & Elliott copper and smelting concerns are quietly enquiring, with a view to the establishment of a smelter and refinery at some point either on this coast or Vancouver island. Until such provision shall have been made there will be much retardation of Coast and Island precious metal mining development as a result of the lack of cheap and easily accessible ore treatment facilities, backed by capitalists, able to pay ready money for ores sold them.

MATTE SMELTING AT THE HALL MINES.

OUR illustration on this page is from a photograph kindly supplied by the Provincial Mineralogist, Mr. Carlyle, and shows the new matte smelting furnace at the Hall Mines, with Mr. R. R. Hedley, the superintendent, in the foreground. The furnace is one, if not the largest, of its kind in the world. In an article contributed recently by Mr. Hedley to the *Engineering and Mining Journal*, of New York, the following description is given:

"This furnace was designed and erected by Mr. Paul Johnson, late superintendent of the works. Its dimensions are: At tuyeres 144 in. by 44 in.; at top of jackets, which are 5 ft. 6 in. high, 144 in. by 64 in.; and at feed-floor, 160 in. by 72 in. The top height of the columns is 12 ft. 6 in., but the charge is generally maintained 4 ft. lower, varying, however, with conditions of charge, etc. The tuyeres, eight in number on each side, are reduced from 6 in. to $4\frac{3}{4}$ in.; the centre of the tuyere is 24 in. above the bottom, as originally constructed. The bottom is supported by a cast-iron plate, resting on six jack-screws carried by a truck, and consists of a coil of 2-inch water-pipe bedded in steep (brasque), and a course of fire-brick on end. On this the furnace makes its own bottom, which probably is now about 4 in. higher."



NEW COPPER BLAST FURNACE, HALL MINES, NELSON.

KLONDIKE CLOTHING.

THERE is a country on the Eastern side of the Rockies, where you buy your milk by the pound, and the storekeeper cuts it off with a meat-saw, and puts it into a grain sack for you to carry home. In that pleasant land, for six months in the year, the thrifty agriculturist has to light a fire under his cow every morning to thaw her out before he can milk her. It is true that he has to put ice along her spine in summer, to keep the marrow from melting, and builds fires around her at night, as if she were a heathen idol, to keep the mosquitoes from carrying away more than half a pound of underdone beefsteak at a time.

It will be seen, therefore, that the above-mentioned country does not, in climatic conditions, greatly differ from the Yukon. It may be fairly predicted, also, that those accustomed to the aforesaid little inconveniences are the men best fitted to deal with the harshness of the North King in the new Eldorado. Their opinion,

therefore, as to equipment, etc., should be listened to with respect by those rash seekers after the root of all evil who have never seen the thermometer at zero in their lives.

The writer was walking down Government street, Victoria, a few Sundays ago, when he met an old friend from the country I have above endeavoured to describe. We had not seen each other for years, and naturally stood and talked. The friend had a streak or so of gray in his beard and hair, but otherwise had changed very little from the man who, some seventeen years before, had hauled his lumber over the prairie and started up business in a little shack and a tent on the banks of the old Assiniboine and had helped to build up there what is now a prosperous and contented town. "Going to Klondike?" was my first query. "You bet," was the answer. "I've got a small party with me.

There they are." He was right; it was a small party in one way, only four of them; but there was nothing else small about it, for every man stood over six feet in his boots. We chatted on for a few minutes. The morning was warm and sunny. A party of men came strolling along. Their coats were of a yellow as deep and fervent as the gold they were evidently going to seek, and the thickness of the material of each coat and vest was, at a moderate estimate, at least one standard inch. "Do you see that stuff?"

asked my friend. "Yes; mackinaw," said I. "How long were you on the prairies?" said he. "Near ten years." "Ever see any of it there?" "No." "What did you wear when in the country?" "Oh, a suit of woollen underclothing, and corduroy or strong Canadian tweed coat and trousers and a long fur coat for driving." "Just so. Now, look here. I'll bet any money that two-thirds of that meningitis we are hearing such a lot about now is caused by that mackinaw stuff. You perspire like blazes in it, and then get a chill. It catches and holds the damp as a real-estate agent does suckers. No sane man would wear such stuff while undergoing great physical exertion. I have fitted out my men in our old prairie way, and I don't think the meningitis will tie any of us into clove-hitches."

Now, it seems to me that a vast majority of our north-bound goldseekers might very well weigh my friend's words.

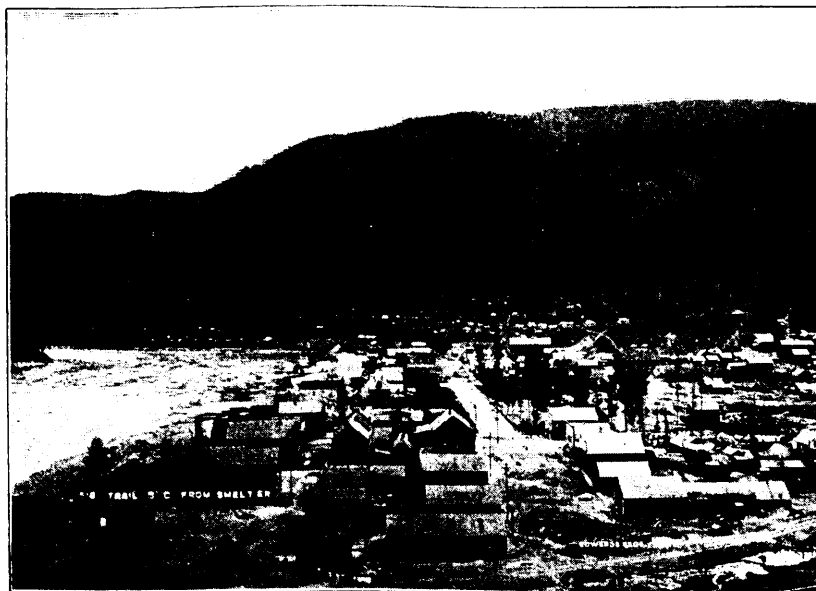
WESTERN.

KLONDIKE HORSE FEED.

AMONG the many inventions placed before the Klondike traveller, perhaps no article has met with such unqualified success as the compressed horse feed manufactured by the Brackman & Ker Milling Co., Ltd., and on which they are now applying for a patent. This feed was first placed on the market about two months ago. They have since sold several hundred tons and from reliable reports received from parties now on the trails who selected this feed when outfitting, the very highest recommendations have been received.

The feed consists of cut hay, crushed oats and crushed corn, all thoroughly mixed and compressed into bales measuring 14x18x18 in. and weighing 100 lbs. each. Each bale is covered with burlap to prevent loss and presents an exceedingly neat appearance. The steamboat companies carry this feed at same rate as general merchandise which makes a saving to the shippers over hay of from seven to twelve dollars per ton.

The Brackman & Ker Milling Co., Ltd., are now also erecting a plant in Seattle, Wash., which business will be managed by the well-known firm of Lilly, Bogardus & Co., Inc. From this branch the American portions of the trail will be supplied, and the Canadian territory from Victoria and Vancouver.



THE MONTH'S MINING—A SUMMARY.

ALBERNI.

There is not a great deal to report from this district for March. The Regina Company has been successfully launched in England, and operations are, we understand, shortly to commence on a large scale on this group of claims. Work on the Cataract hydraulic claim is still in progress, but there are reasons to believe that the present condition of affairs is not entirely satisfactory. The B.C. Gold Trust have secured an excellent property at Uchuckelesit, where the indications are quite phenomenal. The work of tunnelling on the Golden Eagle is well under way.

TEXADA ISLAND.

Work on the Van Anda and other Texada Island mines proceeds apace. During the past month several properties have been sold at good figures, among others the Lion and Tiger claim was acquired by Mr. Beaumont Boggs, of Victoria, who previously held an option of nine months thereon. The new owner has sunk a 45-foot shaft and driven a 35-foot tunnel on the ground. Adjoining this claim is the Silver Tip, upon which extensive development work is now being done, a steam hoist and other machinery having been recently installed. A force of thirty men is employed in the mine. On the Surprise the shaft has been sunk to a depth of nearly 400 feet, and the new hoist is working in a very satisfactory manner.

KAMLOOPS AND VICINITY.

A good deal of placer mining is now being done on the South Thompson river bars and in some cases the pay is very fair. Good samples of dust have also been brought down lately from diggings twenty miles up the North Thompson from Kamloops. In the Kamloops camp itself the season's work has commenced on a number of claims. On the Gold Nugget some very rich free-gold quartz has been found. English capital is beginning to be invested freely in the district, and news has been received that Mr. Henry Croft has succeeded in organizing a company in London, with a capital of £25,000 to acquire and develop the Pothook and Bonanza claims.

LILLOOET.

A very satisfactory report has been received from Superintendent Rives with regard to the present showing of the Golden Cache, and again the spirits of shareholders are rising with the upward tendency of the market prices of the stock. It is very evident, however, that the mine is pockety, but taking the good with the bad the mine may yet be profitably operated. A good deal of exploratory work is being done in this district, and some free-milling quartz veins of low grade value have lately been uncovered.

REVELSTOKE DIVISION.

It is said that the Tangier Company contemplates joining

the Gold Fields of British Columbia and the Waverley in constructing a railroad from the group of mines down to the C.P.-R., and also proposes to construct a smelter on the Illicillewaet River, close to the Canadian Pacific Railroad. According to latest advices a shipment has just been made of fifteen tons of clean shipping ore of the approximate value of \$1,700, equal to £23 6s 8d per ton. The shipment of twenty tons of ore from the Waverley to England, assayed, was proved to contain a value at current prices, of £33 per ton.

TROUT LAKE.

There is every evidence that the mines of the Trout Lake camp, will, ere long, render a capital account of themselves. A recent shipment of ore from the Silver Cup, by far the most promising of the properties owned by the Carriboo, Lillooet & Fraser River Company, is reported to have been the richest parcel of ore treated at the Everett smelter for a year past, the values returned being \$70 in gold alone, while the silver values were exceptionally high. The mine is being rapidly developed and a further shipment of 200 tons is to be made shortly.

VERNON AND OKANAGAN LAKE.

It is satisfactory to learn that the affairs of the Morning Glory Company have at length been placed upon what appears to be a sounder basis, and that operations are to be renewed at the mine forthwith. Assessment work has been performed during the month on a number of claims on the commonage near the Blue Jay property, and also on the lake, but prospecting in this district will hardly commence until next month. Work is also to be resumed at the Ruby, and the company propose to erect a stamp-mill on the property. The Blue Jay tunnel was completed during the month, and the ledge is said to be giving indications of widening.

THE BOUNDARY CREEK DISTRICT.

There has been a very decided activity in this promising district during the month. Steady work is being prosecuted on a number of the more prominent mining properties, including in Wellington camp the Winnipeg, from whence a small shipment of ore was recently shipped to the Northport smelter, returning a net profit of \$49 per ton, and the Golden Crown, upon which the steam hoist plant having been installed, sinking has been resumed in the main shaft. In Deadwood, Greenwood, Long Lake Summit, White & Smith's camp, claims are being extensively developed, some under bond to English capital, the Anglo-Columbian company having acquired of late large interests in the district.

CAMP M'KINNEY.

Cariboo stock is slowly but steadily advancing in price, the present quotation being 55c. Very rich ore is said to have been encountered at the depth of 275 feet in the shaft, and the capacity of the mill is to be increased by ten additional stamps. Minnehaha stock has been also more in demand of late, but this property has been, according to Mr. Carlyle's report, somewhat over-rated by the principal owners.

CARIBOO.

The season's operations have hardly yet commenced in Cariboo, but preparations are being made for a very active summer's work. The Golden River Quesnelle Company expect great things as the result of the now complete undertaking of damming back the Quesnelle River, a feat the accomplishment of which is highly creditable to the Company's engineer. Mr. Thompson, engineer of the recently launched "Incorporated Gold Mines of British Columbia, Ltd.," proceeds shortly to superintend operations on the Slough Creek and Willow River leases, and Senator Campbell, of San Francisco, resumes work at once at Harper's Bar. The Consolidated Cariboo Hydraulic Company have mapped out an extensive plan of development, and construction of the overhead ditch is to be commenced forthwith.

THE SKEENA.

Several parties of prospectors started during the month for this field, whereof at present little is known. It may be expected that the whole of Northern British Columbia and particularly the Cassiar and Omineca districts, will, owing to the Yukon rush, attract much attention.

WHITEWATER.

The snow-fall here has been very heavy and owing to railway blockades it was found necessary to "lay off" a large force of men.

AINSWORTH.

The present conditions governing the cost of treatment and freight is responsible for the present inactivity in Ainsworth District, and a number of mines have been obliged to close down. On one property however, the Twin, preparations are being made to resume work on a more extensive scale and machinery is to be at once installed. A large proportion of the shares of this company were recently purchased by a London syndicate.

NELSON AND YMIR.

This section is forging ahead very rapidly. The Evening Star and Morning Star claims in Ymir camp are reported to have been sold to an English syndicate. A contract is about to be let for the sinking of a 50-foot shaft on the J. R. C., on Toad Mountain, and a concentrator is to be installed on the Dundee.

Advices from the Fern mine, at Nelson, are to the effect that the cyanide plant is being put in. It will, when completed, have a capacity of from 50 to 60 tons per day. It is expected to be in full working order in the course of a month. Development work at the mine is being pushed with a large force of men in the lower tunnels. Returns which have just been received from the Tacoma smelter regarding the car of concentrates recently shipped, and which contained a little over 19 tons, gave net returns per ton of \$60.78, which, everybody will admit, is a good result.

THE SLOCAN.

The weather throughout the Slocan has not been during the past few weeks altogether favourable, thaws having set in and rendered raw-hiding difficult. Notwithstanding shipments have been kept up and two new shippers the Ajax and Pilot Bay were added to the list. At the beginning of the month the Payne tramway, recently completed, was taken over by the Company and has since been working very satisfactorily, one man being able to handle twelve tons of ore daily. The tramway, which is one of the largest of its kind in America, runs from the main ore bins on the Kaslo railway down to the spur constructed by the C.P.R. about two miles below Sandon. The Payne has of late shipped fifty tons daily over the Canadian Pacific. The Ruth is fast becoming one of the principal producing mines of the Sandon camp. It is announced by the management that the operations of the undertaking for the six months ending December 31st last resulted in a profit of over £22,000, out of which an interim dividend was declared of 3s. a share. Some rather unfavourable reports of the Slocan Star have been circulated on the Coast but whether upon proper grounds is questionable. Portions of the mine are being meanwhile retimbered and shipments are to be resumed next month as the Noble Five work is to be again started shortly. Excellent accounts have been received of several properties on Slocan Lake, particularly of the Arlington, where the showing of ore is described as a magnificent sight. The force on the Galena Farm has been increased and active development work is in progress.

ROSSLAND.

The contract entered into by the War Eagle Mining Company with the new proprietors of the Trail smelter to ship 100,000 tons of ore from the mine for treatment at the works must be regarded as decidedly the most important occurrence at Rossland during the month. At the reasonable freight and treatment charge of \$7.50 per ton, it will be possible to derive a profit from \$12 ore and the average value of the War Eagle's product is very much higher than this. In consequence of the promising outlook the shares have risen to \$1.15. In the near future other mines, including the Centre Star, Iron Mask, Nickel Plate, Monte Cristo, Sunset No. 2, and others, will doubtless be shipping heavily and the prospects for the Rossland camp were never brighter than to-day. A rich strike is reported to have been made at the 200-foot level in the Deer Park mine, a large body of ore having been encountered with a rich pay-streak of 18 inches therewith. This it is expected will direct more attention to the mines in the south belt. In several mines the working force has been increased and a large quantity of new machinery was either ordered or installed in March. The sale of the Waneta mine adjoining the War Eagle for \$750,000 was recently consummated.

It is, moreover, announced that tenders have been called by the Crow's Nest Railway Co. for the grading of road to Fort Steele from the main line. This branch will afford better facilities for transporting the ores of the district.

EAST KOOTENAY.

The outlook for the whole of East Kootenay this year is most encouraging, and the "shadow of coming events" is very noticeable in the activity of the past four weeks, especially in the vicinity of Fort Steele. A number of mining properties here have been acquired by companies and syndicates, one of the most recent deals being the sale of the Morris group to English capitalists. The placers of Wild Horse, Bowery and other creeks are being exploited and promise well.

NOTES FROM SHOAL BAY.

THOSE properties which have been systematically worked in this district, with a view to making mines of them, are all looking well, and give the strongest evidence of proving highly remunerative to the owners in the near future. Both the Dorothy Moreton and Blue Bells are about to instal machinery forthwith. The Blue Bells, which is one of a group situated on the mountain above Owen Point, and owned by the Frederick Arm Mining Company, and by them bonded to the London and Vancouver Development Company, has been proved to possess a large body of very high grade pyrrhotite; and the property has been highly spoken of by Mr. Kendall, who recently examined and reported on it. The first work was done in April, last year, when some surface cuts were made across the lead. In May a tunnel was started at the discovery post. Later on open cuts were made higher up across the lead, in two or three places; and very high assays

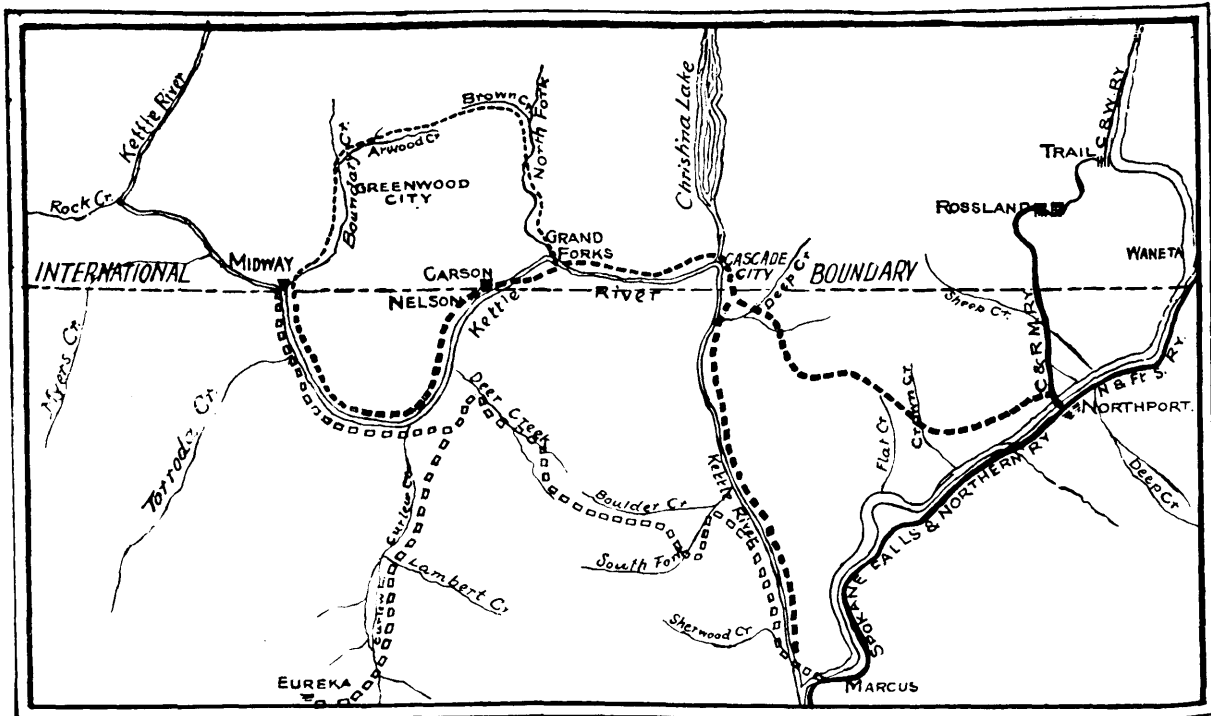
said to go \$93.00, over \$400, and one over \$1,500, were obtained on the surface. The next and principal work consisted of a tunnel 114 feet long, which cut the lead at a depth of 80 feet, where it proved to be 52 feet wide. Samples taken from all across the lead on both sides of the tunnel, were said to run \$12 or \$13, and 28 feet of the lead assayed \$26. There is a pay streak six feet wide in the lead, and on this drifts have been run to the south about 24 feet, and to the north 14 feet. At the entrance of the north drift a winze was sunk 42 feet, and at the end of the south drift one of 16 or 18 feet. The ore body, which is a very high pyrrhotite and carries hardly any copper, was as large at the end of the drifts and in the bottom of the winzes as on the surface, and is said to assay away up in the hundreds. It seems beyond a doubt that this will be a very great mine, and a veritable bonanza for the fortunate possessors. Adjoining claims, owned by the same outfit, are the Gold Bug and Dashwood.

Adjoining this property above it and said to be on the same lead, is the Ohio, on which some fifteen feet of tunnel have been run. Assays are said to run from \$5 to \$96, and average samples in the tunnel to have given from \$13 to \$28, and a 3-foot paystreak to have given \$52.

Messrs. McKinnon & DeBeck own a group of claims also,

process. I hope to be able to give you a full description of this property shortly. Nearby are two claims, the Ohampion and Commonwealth, bonded by Messrs. D. McCallum, P. Smith, M. Nash and W. Whalen, to Messrs. Adams & Sword, for \$25,000. Work was commenced on the line between the two claims on January 1st, and a tunnel has been driven in which tapped the lead at a depth of 100 feet, on Feb. 14th. On the surface the lead is forty feet wide. In the tunnel it is full of mineral. In a quartz gangue are some iron and copper sulphides, and a black powdery mineral, said to be gold sulphide. Assays of \$100 and \$130 were obtained on the surface. These claims are 4,000 feet up and about three miles from Fanny Bay. A pack trail has been graded part of the way, and eleven men are at work on the claim. The ore from these claims may eventually come out down to Loughborough Inlet, which is an easier grade than to Fanny Bay.

In Loughborough Inlet, on the east side, two claims, the Vancouver and Victoria, have been bonded by the Bell-Irving Company, from Messrs. W. Ellis and Albert Jackson. Work was commenced on January 1st, and a drift of fifty feet was run in on the lead. Then at the mouth of the tunnel a shaft was sunk, which was down about twenty feet at the beginning of March, in which is a 2½-foot pay streak, on which assays



MAP SHOWING THE PROPOSED ROUTE OF THE KETTLE RIVER VALLEY RAILWAY.

adjoining the Frederick Arm Mining Company's claims to the south and east, which are also said to have the same lead on them.

The mountain between the entrances to Frederick and Phillip's Arm, on which the above properties are situated, will soon become famous. On the chart this is called Treble Mountain.

On the Phillip's Arm slope a lead known as the Mainland lead has been traced over some seven or eight claims; and on the most southerly of these, the "Don," a tunnel 68 feet long has been run, at the end of 20 feet of open cut. At 42 feet in the tunnel a 5-foot lead of quartz, with copper and iron pyrites was encountered; and at 54 feet another lead of the same character, but looking rather better, was encountered, and was cut for fourteen feet, when work was stopped owing to hard weather, but the further wall was not reached. Both the leads dip under the mountain. The owners are said to be highly satisfied with the results so far attained on their property.

On the mountain above Fanny Bay, on the west side of Phillip's Arm, the Dorothy Moreton has had some hundreds of feet of tunnel work done on it, and with such satisfactory results that the owners are now on the point of erecting an electrical plant for the treatment of the ore by the

of from \$70 to \$140 have been obtained. The whole lead is twelve feet wide.

The claims are situated half a mile from the beach, about four or five hundred feet above salt water, and at the foot of the mountain behind the Gray Ranch.

On the opposite side of Loughborough Inlet, in Haydon Bay, three claims were purchased by the Haydon Bay Mining Company from Messrs. T. Macquire, W. Whelan, J. Cortello, W. Ellis, and G. Morris. They are called the Nellie Gray, Lizzie Gray and Grizzly Gray. On the Nellie Gray a tunnel 80 feet long was run, and at the end of it a shaft was sunk 50 feet. This property has now been turned over to an English Company through Lapont Heatly, the London agent of the Hastings Mill Company, for \$50,000, with a cash payment of \$10,000. A stamp mill test, made by the well known assayer of the B.C. Agency, W. O'Sullivan, gave \$20 13-100 across the 4-foot pay streak in the bottom of the shaft. In the tunnel the same pay streak gave values from \$2 50 to \$14. The width of the lead is 23 feet, and in this there is 19 feet from the foot wall to the pay streak, which is on the hanging wall. In this 19 feet there is a sprinkling of galena, and small streaks, about one-eighth inch wide of cinnabar. The pay streak is a fine bluish quartz, heavily mineralized with very fine iron pyrites.

WALTER HARVEY.

PUBLICATIONS.

[Notice: Authors and publishers sending books for review should state the published price.]

"Manual of Hydraulic Mining, for the use of the Practical Miner; Second Edition, revised by T. F. Van Wagman, E.M.; D. Van Nostrand Company, New York; 18 mo., cloth. Price, \$1.00."

This little book should serve a very useful purpose. The information it contains is more or less of an elementary character, but as the author is careful to point out, his aim has been to compile a work that will be of real service to the practical and working miner, who, while rarely deficient in common sense, is generally unacquainted with the principles of physics, and generally rusty in arithmetical methods. In the daily discharge of his business he is continually confronted with engineering problems of more or less complexity, and compelled to depend for their solution—trained engineering advice being unobtainable or too expensive—upon his own limited experience or upon that of his co-labourers, with results that are too often disappointing and perhaps disastrous. It is not, however, claimed for the "Manual" that it will take the place of a trained engineer in important enterprises or that it answers all questions appertaining to hydraulics, nevertheless, to the miner working his own ground, its tables and formulas will undoubtedly prove of great assistance, if only for checking his own calculations. Among the more useful tables are the following: for finding the duty of the miner's inch of water in moving various materials; the nozzle force from head; the reduction of head by friction and bends in the pipe; the size of excavation required to carry stated volume of water, and the relative strength of iron piping.

Chapters 7, 8 and 9 are taken up with rules for the solution of the more ordinary problems which arise in placer mining. In passing we may say that the volume contains the best definition of what constitutes placer ground that we have yet come across. "Gold," we are told, "occurs in gravel deposits in a metallic condition. The chemical and mechanical operations required to separate it from the vein substances with which it was originally associated have all been performed by nature. That wonderful agency has also supplemented her work by again collecting the particles of metal within certain limits. In other words, degradation and erosion of quartz veins has been followed by the partial concentration of the material so broken up; and while this operation has not resulted in an enrichment of the gold-bearing material (on the contrary, it is much poorer, bulk for bulk), the metal is placed in association with substances from which it may be separated with extreme ease and very small cost." The author, after showing that there is far less risk in hydraulic mining than in quartz, suggests that in the former there is an additional advantage that "the extent and richness of the gravel-bed may be completely studied and ascertained before working it and at a slight cost, while vein mining is from first to last more or less of an experiment and a chance." There is certainly some truth in this, but the last sentence might well have been more strongly qualified.

A summary of the mineral production of Canada for 1897 has been issued by the Geological Survey. The value of the metallic products for the year is placed at \$13,996,234, the non-metallic at \$14,542,939, and the estimated value of mineral products not returned at \$250,000, or a total value of \$28,789,173. These figures show an exceedingly gratifying increase, particularly as regards the production of gold, which is found to be nearly 123 per cent. in advance of 1896. The increase here is, of course, largely due to the Yukon discoveries, although the output from British Columbia mines contributed considerably towards the satisfactory results attained. The province in fact is responsible for the increased production of all the principal metals with the exception of nickel, of which the Sudbury mines yielded the increase of 18 per cent.

"Papers and Reports relating to Minerals and Mining;" comprising: Statement by the Minister of Mines; Report on the Goldfields; Warden's Reports; Report on Coal Mines; Water Conservation for Mining and Irrigation Purposes, Otago and Westland districts; Report on Geology of Cape Colville Peninsula; Chemistry of the Cyanide Process. Published by authority, John MacRay, Government Printer, Wellington, New Zealand, 1897.

The New Zealand Department of Mines is to be congratulated upon the publication of this exceedingly interesting and bulky report, which, however, appears somewhat late in the

day, for the tables showing the mineral production of the colony are not brought beyond December, 1896. This hardly compares favourably with the work of the British Columbia Bureau. In 1896 the value of the New Zealand precious mineral exports decreased, compared with those of the preceding year, by £120,826 or nearly \$600,000, the falling off being chiefly attributable to the "increased demand for mining properties by English companies and the consequent change of ownership of many of the gold producing mines, together with an alteration of policy in preparing for extensive exploring operations." Doubtless this is the correct explanation, but if so the situation still remains unaltered, for according to the figures published in the *New Zealand Mines Record*, an official monthly journal, the exports of gold and silver bullion from January to December or eleven months of 1897 amounted to a total value of £930,846, which averaging the production at £90,000 per month would bring the values for 1897 rather below those of 1896, of £1,052,017. The report contains a number of excellent maps, and is in every respect a most interesting blue book.

"Lubricants," by J. J. Redwood. Published by Spon & Chamberlain, New York. Price, \$1.50.

This little book contains a considerable amount of information on oils and greases that every engineer should make part of his stock in trade, but there is one great defect in the method of treatment. Bald statements are made regarding important conclusions which readers have no opportunity of checking, for neither the facts nor the arguments by which these conclusions have been reached, are submitted to their consideration. It is very useful to know certain facts of inference, but it is much better to understand the reasoning which establishes such inferential facts.

There is one sentence in the chapter on fatty oils which indicates very clearly the incompleteness of our knowledge of lubricants. It is this: "The only sure way of doing justice to machinery is to try numerous lubricants, and when one is obtained that gives thoroughly satisfactory results, use it and no other."

We are indebted to Messrs. Fraser & Richards, of Ashcroft, for a map showing the route starting from that point to the Yukon gold fields. The map is admirably got up, and will be of great use to those proposing to travel to the North by this road, which for experienced men, having only limited means, is certainly the best.

CORRESPONDENCE.

The Editor does not hold himself responsible for the opinions which may be expressed in this column. No notice will be taken of communications unless accompanied by the full name and address of the writer.

TO THE EDITOR:—I submit the following account of an adventure that befell me the other day, in the hope that it will serve to warn strangers against the dangers that one may expect, even in the quiet streets of Victoria in these days of Klondike lunacy:

A Klondiker, two Klondike dogs, a West Coast prospector not unknown to fame, and the writer, came very near being involved in an appalling catastrophe the other evening on Johnson st., Victoria. The Klondiker was leading his dogs—large, fragrant animals with equilateral triangular ears, jaws like steel traps and coats like door-mats—by a couple of steel chains. The prospector was crossing in front of the outfit when we came upon the scene. The dogs differed as to which side they should pass the prospector, and one went in front of him while the other passed behind, then moving around to speak to his fellow-canine. The result was a tangle of dogs, steel chain, Klondiker and prospector, the latter eventually sitting down on the sidewalk with a jar that made the adjacent store-windows rattle. The electric light shone full on his face and showed a countenance struck as white as ashes, eyes standing out like the proverbial hat-peg, and blue lips that quivered and writhed in a vain attempt to formulate the Queen's English. "What is the matter with you, man?" asked the Klondiker, who, with my assistance, had got out of the tangle, and was now trying to extricate his beasts of prey. "Them there dogs ain't a bit wicked; they'll never hurt you." "Dogs be ——" came in hoarse and broken tones from the recumbent one. "Lift me to my feet, for the Lord's sake, and be gentle about it." Thinking the man was seriously hurt, the two of us managed to untwist the dogs and get him

up. No sooner, however, was he on his feet than he reached both hands under his coat-tails, and drew forth from his pockets two parcels, which he held up to our astonished gaze. "That there's dinermite" said he, shaking the longer parcel solemnly at us. "And them there," holding out the smaller, "is percussion caps. One in each hip pocket, gents. An' a asphalt sidewalk. An' me a-settin' on it like a ton o' rock. It's the dear Lord's mercy"—and with that he fell to trembling again. Speaking for myself, I am not afraid to own up to being pretty well rattled, and the Klondiker did not seem much better. But he was a man of resource. "Come right over and take a drink, pard. That'll steady your narves," and he took in a pretty tight reef in his dog-chains. We had that drink and parted, but the slumbers of the present scribe that night were little better than a series of dynamite explosions. What we would like to know is how men so extraordinarily careless as our prospector friend, manage to get around and fool with explosives, and not get blown to atoms.

"BILL THE ADVENTURER."

Victoria, B. C.

THE TIN HORN MINE AT FAIRVIEW.

TO THE EDITOR:—We noticed a report from your Fairview correspondent some time ago stating that there was not sufficient water to run the mill, and scoring the management a little for not putting the mill on the river. We have plenty of water, and the only trouble was that it cost a considerable amount to pipe it. However, it is much better to have it run down than pump it up or convey our ore to the river, which would have to be done if we had built there. We have water enough for a mill double the size. We might ask you to use discretion in putting articles in your paper, as although it does not affect us, still the public are nervous about all mining ventures, and it gives us the trouble of contradicting whatever may be untrue. We are doin' our best, and we believe that both the Tin Horn and Winchester will be winners, but much work is necessary, as in any other large concern.

The Tin Horn is being steadily developed and is looking very well. The former Superintendent made some mistakes, which are being rectified as quickly as possible, and we hope to have the mill running and turning out good results in a short time.

DIER, DAVIDSON & RUSSELL.

[We may state that we have every confidence in the integrity of our Fairview correspondent, "Ricardo," and do not believe that he would bring a charge—as complained of by Messrs. Dier, Davidson & Russell—without proper cause for doing so. It is possible, however, that in this case his judgment was at fault, but at any rate he will doubtless take an early opportunity of explaining upon what grounds his criticisms were based.—Ed.]

CONDITIONS OF MINE-WORKERS AT ROSSLAND. EVILS OF THE TRUCK SYSTEM.

TO THE EDITOR:—In answer to an article in the March issue of your valuable paper, I wish to make a few statements:

1st. Your contributor takes it for granted that in delivering a favourable report of most mines in this camp, the Inspector did not do his duty. There are many in this camp who hoped to see the underground workings of the Le Roi mine condemned. Unfortunately there is a class of men in this camp who think that when they obtain work in a gold mine, and especially one which pays a dividend, they are only expected to draw their salary. Such men do not "get on" amicably with the management of this mine, and especially with its Superintendent, who expects a fair shift's work for the standard wage of the camp. They are told that it is impossible to carry them on the pay-roll for ornament's sake, so they, to even things up, circulate all kinds of rumours, both about the mine and its management. Having worked in the Le Roi mine for more than eighteen months, and up till last month, I can say that it is the best mine for the workman, in the camp, always excepting mines which have no boarding houses. The firing regulations in the Le Roi mine are arranged by the men, and if anyone can suggest an improvement it is at once accepted. There is no limit to the fuse allowance, and on the 600-foot level fifteen feet of fuse to each hole is used. In testing that length I found it to burn for six minutes, thirty seconds. I should not be afraid to wager that I could light a fuse of that length at the 600-foot station, and climb to surface before it had finished burning.

I believe the Stonehouse incident to be entirely the fault of the clerk at the surface, and also of his partner, who circulated

the rumour about Stonehouse having been killed. Stonehouse was my friend, and I was the first to search for him.

The boarding-house system is next in order. If the boarding-houses where men are forced to board, were capitalized for a reasonable sum and the stock placed on the market, it would command in most cases a higher price than that of the mine to which the hotel is an appendage.

There are, at a conservative estimate, one thousand men working in this camp. Fifty per cent. is a very low estimate of those who board at the Company houses. Then five hundred men, paying \$30 per month for board and lodging, pay into these Company houses the small sum of \$15,000 per month. That same amount of money, if divided amongst the people of this town, would mean the employment of at least two hundred people who are now idle.

The very best of board is obtained at less than the prices charged at the mine hotels. I can say that I have seen better board in a railroad mess-house, at \$4 00 per week, than in the Le Roi Hotel at \$7 00.

Young men having mothers and sisters depending on them, and not feeling themselves able to support a wife, are forced to pay \$30 per month to the Hotel. The writer paid room-rent at the Le Roi Hotel for eighteen months, and never used a room. Nor is this the worst feature. Not very long ago the employees of the Le Roi mine went in a body to the Superintendent, and requested better "grub." He listened to them kindly, and referred them to the manager of the Hotel. The manager, gentle and considerate always, promised to do better, and immediately informed the mine management that if better board were furnished the men, the hotel dividends must decrease. Now any material decrease in the hotel profits would naturally affect the amount of monthly dividend declared by the Company. This must not be; profit must not be allowed to decrease one iota. Result—fourteen married men were weeded out, to be replaced by those who would board at the hotel, next morning, and the good work is going on.

The patient forbearance of the miners of this camp, shows that they are indeed as forbearing a body of men as can be found anywhere in the province.

"All experience hath shown that mankind are more disposed to suffer evil while evils are sufferable, than to use force to overcome them." The boarding-house system in this camp is getting insufferable.

The Miner's Union of this camp have been placidly watching developments. Their influence to bring about a desirable change must be reckoned as "nil." Men will not continue to pay money to what they consider more of a sick benefit society, afraid to live up to the standard of its own constitution, when they pay a hospital fee at their mine.

The married men of this camp declared and have maintained that the boarding-house system was not a grievance of theirs. There are at least fourteen married men who have since changed their opinions. Yes, the "truck system" is upon us, and we humbly bow our necks to receive the yoke, yet the writer is one of a few who hope that we who are patiently bearing such injustice, will yet find a champion amongst the law-makers.

It may be that the hour of deliverance has not yet arrived for us. God grant that it may come before the limits of forbearance are passed.

ROSSLAND, B.C. ANOTHER DISGUSTED LOOKER-ON.

PROPOSED AMENDMENTS TO THE MINERAL ACT.

TO THE EDITOR:—Supposing A stakes a claim, but fails to do the work prescribed by the Act, and B re-stakes the said claim at the expiration of the time granted to A by the Act; why could not the Act be altered so that B could give "notice" of record of the claim in question. But the Government—while recording the "notice" and acknowledging this by a special document—decline to grant a "record" unless, within a specified time during the next year, the work called for by the Act be done by B. This time allowance should only be sufficient to do the work, and should be at the discretion of the Gold Commissioner, owing to the difference in climatic conditions. The Gold Commissioner or other justified Government employee would of course be responsible for the just and fair application of the power thus vested in him.

Vancouver, B.C.

A FREE MINER.

[This is one of the best suggestions yet put forward as a result of the discussion provoked by Mr. Carlyle. If our correspondent's suggestion were carried out it would neutralize the evil effects of the "abandoning" clause to the mineral act of last session.]—Ed.

ANSWERS TO CORRESPONDENTS.

J. T. (South Edmonton).—The Beatty Gold Mining & Dredging Co., operating below North Bend, on Boston Bar, and using a shovel or dipper dredge, succeeded in saving a sufficient quantity of gold to pay the shareholders a profit of \$7,000. Dredging, however, has not been heretofore attended with great success in B.C., but this may be largely attributed to the inexperience of those going into the undertaking, and also to the fault of the devices used. The bucket form of dredge is undoubtedly the best, and we would refer you to the article on this subject published in the March MINING RECORD for particulars. See the review in this number on "Van Wagenen's Manual of Hydraulic Mining."

S. M. (London, E.C.).—A quite baseless rumour. The mine is showing up in grand style. No; the head offices are at Kaslo.

T. H. H. (Clyde, N.Y.).—It will be some time at least before you can expect a dividend, we fear. You will be glad to hear, however, that a new management has taken charge, and possibly this may have a good effect. The mining properties in this district do not appear to be turning out very well at present, for while the surface ore may assay well, with depth the values seem to greatly depreciate. This has occurred in every instance where development work has been at all extensively carried on, but it is far too early to condemn the camp on this account, and it is quite possible that your investment will prove reasonably remunerative.

J. E. K. (Ashcroft, B.C.).—It is a question of dollars and cents—would Ashcroft support such an undertaking? We believe that the Ashcroft route is to be recommended to experienced prospectors who would explore on the way to Yukon the probably rich fields north of Cariboo, but you will surely admit that if a man is in a hurry to reach Dawson, the journey starting from the coast cities is the easiest and most direct.

R. A. H. (Hecla Works, Sheffield).—Certainly. You will find a further reference to the property in this issue.

D. H. (Leeds, England).—My dear sir, "When the devil was sick," etc. He is now recovering, so beware.

H. R. (Toronto.) You can save yourself a good deal of bother by outfitting on the coast. We doubt very much whether the difference in cost, taking into account freight charges, would be of much importance.

T. (Nelson.) Thanks very much for your letter. Yes, we noticed the articles to which you allude.

R. H. S. (London, Eng.) 1. Another dividend, it is announced, will be forthcoming shortly. 2-3. Both good investments. 4. Hardly developed sufficiently yet to be able to say.

STOCK MARKET.

THE stock market for B.C. mining shares has been active during the month of March, and quite a volume of business has been done by brokers.

In the Slocan District the most active stock has been Dardanelles, some large blocks having changed hands in the neighbourhood of twelve cents. There has also been considerable movement in Arlington shares, owing to very encouraging reports from the mine. Noble Five shares have been in demand, owing to a loan having been arranged so as to pay off the indebtedness to the bank, and it is understood the Company has nearly \$100,000 in its treasury for development. The shares of Rambler-Cariboo have also been enquired for, and it is reported this Company will pay another dividend in April.

The indications are that there will be a great demand this year for Slocan stocks, for the simple reason that for one dividend-paying mine in the Trail Creek district, there are over twenty in the Slocan, paying handsome profits to their lucky owners. A great many are not incorporated into joint stock companies.

In the Trail Creek district the most active stocks have been Deer Park, War Eagle, Le Roi, Josie, Eureka and Monte Cristo, and in the Nelson District the Fern has been the favourite.

In the coast mines stocks have been quiet, as the principal excitement in the coast cities is the Klondike, for which point steamers are leaving Victoria almost daily—sometimes three steamers in one day—carrying 400 to 500 passengers each, bound for the Yukon District in search of gold.

Although coast stocks have been quiet, there have been quite a number of sales of valuable copper properties on the West Coast of Vancouver Island, and mining engineers who

have examined the Coast, speak in the highest terms of the wonderful mineral resources which only require capital to develop the Coast into a scene of great activity and prosperity.
A. W. MORE.

The Colorado Iron Works Company of Denver, Colorado, made a shipment of five car-loads of machinery for the Randsburg Santa Fe Reduction Company, who are installing a fifty-stamp mill plant and a sampling mill at Barstow, California. The balance of the machinery will be shipped as soon as completed. They also made a shipment of a ten-stamp mill plant of machinery for Dr. Nelson, to be erected near Milford, Utah.

Mr. A. A. Davidson, of the Winchester Gold Mining Company, of Fairview, in the Osoyoos Division, has purchased a complete compressor plant from the Jencke Machine Company, of this city, at a cost of \$5,000. The plant consists of a four-drill compressor plant with four drills, a 30-horse power hoisting engine, with wire rope, and all the necessary paraphernalia. The plant was in stock in this city, and was put on board the cars Monday and started on its journey to Fairview.

A large new ore crusher is being installed in the Hall Mines smelter. New elevators will also be put in.

SHIPPING MINES.

ROSSLAND.

Following are the ore shipments from the mines adjacent to Rossland from January 1, to March 5, 1898:

Le Roi.....	13,009
War Eagle.....	505
Centre Star.....	150
Poorman.....	223
Iron Mask.....	623
Cliff.....	60
Velvet.....	350
Total.....	14,920

The ore shipments for the seven days from March 12 to March 19, inclusive, were as follows:

Le Roi.....	1,401
War Eagle.....	40
Iron Mask.....	80
Total.....	1,521

The shipments for the same period last year aggregated 1,230 tons.

BULLION AND MATTE.

	Pounds.	Value.
Hall Mines Smelter (Copper Matte).....	216,940	
Trail Smelter (Matte).....	203,013	
Gold Bullion.....		\$6,000

ORE.

	Tons.	Approximate Value.
Le Roi Mine, Rossland.....	3 920	
Iron Mask Mine, Rossland.....	160	
Poorman Mine, Rossland.....	140	
Pilot Bay Concentrator.....	120	
Whitewater Mine, Slocan.....	297	
Dardanelles Mine, Slocan.....	30	
Fern Mine, Nelson.....	42	
Black Diamond Mine, Ainsworth.....	20	
Kootenay Ore Co., Kaslo.....	87	
Montezuma Mine, Slocan.....	153	
Rambler Mine, Slocan.....	105	
Payne Mine, Slocan.....	740	
Idaho Mine, Slocan.....	119	
Queen Bess Mine, Slocan.....	196	
Comstock Mine, Slocan.....	36	
Vancouver Group, Slocan.....	40	
Ruth Mine, Slocan.....	255	
Last Chance Mine, Slocan.....	180	
Antoine Mine, Slocan.....	34	
Reco Mine, Slocan.....	80	
Ajax Mine, Slocan.....	34	

Total to March 19th.....	6,999	\$ 485,389
Total for January.....	9,500	1,197,489
Total for February.....	8,678	949,138

INDUSTRIAL NOTES.

WE have received from the secretary of the Joshua Hendy Machine Works, San Francisco, the following list of machinery supplied by this firm to Messrs. Dier, Davidson & Russell, for the Tin Horn mine at Fairview :

Eight "Hendy" improved two-stamp batteries, each stamp weighing 900 lbs. arranged in sets of four stamps, with driving pulley between each pair of batteries.

Eight "Hendy" improved automatic "Challenge" ore feeders.

One 10 x 16 "Hercules" rock crusher; full set of copper plates, electric silver plated, for each battery.

Six 5-feet "Hendy-Norbom" ore concentrators.

One 14 x 16 improved Corliss steam engine with one 54 x 16-ft. steel tubular boiler.

One 8 x 8 vertical steam engine for driving concentrators, heaters, pump, etc. All necessary shafting, pulleys, boxes, etc., to make plant complete, which this company erected at the mine at Fairview, B.C., including a complete mill building, tramway, etc., which has been crushing from 60 to 75 tons per day.

The Hall Mines Co. has closed a contract with the Dominion Wire Rope Company, Limited, Montreal, for 10 miles of wire rope for its cable way from the mines to the smelter. Its weight will be about 40 tons, and it will be made in six sections of over 1½ miles in length, for convenience in handling.

The Colorado Iron Works of Denver, Colorado, made a shipment of five carloads of machinery for the Randeburg-Santa Fe Reduction Co., who are installing a 50-stamp mill plant and a sampling mill at Barstow, California. The balance of the machinery will be shipped as soon as completed.

They also made a shipment of a ten-stamp mill plant of machinery for Dr. Nelson, to be erected near Milford, Utah.

An extensive pumping plant has been shipped to the properties of the Miocene Gravel Mining Company, Ltd., of Cariboo.

The Colorado Iron Works Co., of Denver, Colorado, are installing a gravity tramway on the property of the Golden Star Mine, located at Black Hawk, Colorado.

It is proposed to instal a steam hoist, pump and compressor at once on the Brooklyn, a promising claim in Greenwood camp, Boundary Creek, recently bonded for \$75,000 to Messrs. Mackenzie & Mann, the contractors.

A concentrator, the cost of which is placed at \$15,000, is to be erected on the Dundee mine in the Ymir camp this spring.

Concentrator machinery has been ordered for the Northern Belle, in the Jackson Basin.

Mr. Sweeny, the superintendent of the Stemwinder camp, Fairview, is ordering a compressor and a pumping and hoisting plant for this mine.

The Canadian General Electric Company is supplying three small direct connected units for the C. P. R. steamships on the Stickine river. These machines will be 4 kilowatts each, direct connected to vertical engine of special type, running at 600 revolutions per minute.

CATALOGUES AND TRADE CIRCULARS.

THE Weber Dredge Company, has issued a catalogue of dredges manufactured at the Kansas City factory. The firm recommend as the most practical device the ladder or bucket dredger. In the Weber dredge the principal parts are built of steel and the machines are made in five sizes requiring from 8 to 35 h. p. and with lifting capacities of from 100 to 2,000 cubic yards per twenty-four hours.

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Rossland.

36 Government St., Victoria.

Mining Stocks.

Prepared by A. W. More & Co., Mining Brokers, Victoria, B.C., Mar. 21, '98

Company.	Capital.	Par Value.	Price.
TRAIL CREEK.			
Alberta.....	\$1,000,000	\$1	\$ 10
Big Three.....	3,500,000	1	9
Bruce.....	1,000,000	1	10
Butte.....	1,000,000	1	02
California Con.....	500,000	1	05
California.....	2,500,000	1	15
Camp Bird.....	1,000,000	1	05
Celtic Queen.....	750,000	1	03
Centre Star.....	500,000	1	3 50
Colonna.....	1,000,000	1	22
Commander.....	500,000	1	17
Deer Park.....	1,000,000	1	13
Enterprise.....	1,000,000	1	20
Evening Star.....	1,000,000	1	06
Georgia.....	1,000,000	1	10
Gertrude.....	500,000	1	11
Golden Drip.....	500,000	1	15
Great Western.....	1,000,000	1	10
Hattie Brown.....	1,000,000	1	03
High Ore.....	500,000	1	05
Imperial.....	1,000,000	1	10
Iron Horse.....	1,000,000	1	20
Iron Mask.....	500,000	1	44
I.X.L.....	1,000,000	5	10
Josie.....	700,000	1	29
Jumbo.....	500,000	1	55
Le Roi.....	2,500,000	1	7 75
Lilly May.....	1,000,000	1	20
Mabel.....	1,000,000	1	15
Mayflower.....	1,000,000	1	11
Monita.....	750,000	1	19
Monte Cristo.....	1,000,000	1	21
Morning Star.....	1,000,000	1	04
Nest Egg Firefly.....	1,000,000	1	10
Northern Belle.....	1,000,000	1	10
Novelty.....	1,000,000	1	05
Palo Alto.....	1,000,000	1	05
Phoenix.....	500,000	1	12
Poorman.....	500,000	1	12
Red Mountain View.....	1,000,000	1	11
Rossland, Red Mountain.....	1,000,000	1	22
St. Elmo.....	1,000,000	1	07
St. Paul.....	1,000,000	1	12½
Silverine.....	500,000	1	06
Virginia.....	500,000	1	21
War Eagle Consolidated†.....	2,000,000	1	1 15
West Le Roi.....	500,000	1	30
White Bear.....	2,000,000	1	19
AINSWORTH, NELSON AND SLOCAN.			
American Boy.....	1,000,000	1	15
Arlington.....	1,000,000	1	12
Argo.....	100,000	0 10	10
Athabasca.....	1,000,000	1	30
Black Hills.....	100,000	0 10	10
Buffalo of Slocan.....	150,000	0 25	—
Canadian M. M. and S. Co.....	2,000,000	1	07½
Cumberland.....	500,000	10	—
Dandee.....	1,000,000	1	50
Dardanelles.....	1,000,000	1	12
Dellie.....	1,000,000	1	12
Eldon.....	1,000,000	1	05
Ellen.....	1,000,000	1	07½
Elkhorn.....	1,000,000	1	10
Erchequer.....	1,000,000	1	10
Fern Gold.....	200,000	0 25	75
Goodenough.....	800,000	1	25
Gibson.....	650,000	1	17½
Grey Eagle.....	750,000	1	—
Hall Mines.....	300,000	£1	—
Idler.....	1,000,000	1	12½
Kaslo-Montezuma.....	1,250,000	1	20
London.....	150,000	25	25
Minnesota.....	1,000,000	1	25
Nelson-Poorman.....	250,000	0 25	25
Northern Light.....	250,000	1	16½
Noble Five Con.....	1,200,000	1	19
Ottawa and Ivanhoe.....	1,000,000	1	12½
Payne.....	2,500,000	2 50	—
Phoenix Consolidated.....	1,000,000	1	07
Rambler Con.....	1,000,000	1	31
Reco.....	1,000,000	1	1 70
Slocan-Reciprocity.....	1,000,000	1	06
Slocan Start.....	250,000	50	2 30
Santa Marie.....	\$1,000,000	\$1	05
Silver Band.....	250,000	0 25	12½
Slocan Queen.....	1,000,000	1	10
Star.....	1,000,000	1	07
St. Keverne.....	1,000,000	1	05
Sunshine.....	500,000	10	—
Two Friends.....	240,000	30	15
Washington.....	1,000,000	1	25
Wonderful.....	1,000,000	1	05
LARDEAU.			
Consolidated Sable Creek Mining Co.....	1,500,000	1	10
TEXADA ISLAND.			
Texada Proprietary.....	250,000	25	25
An Ande.....	5,000,000	1	06
Victoria-Texada.....	150,000	0 25	10
Texada Kirk Lake.....	600,000	1	1 00
Raven.....	1,000,000	1	10
Old Bar.....	100,000	0 10	10

VANCOUVER ISLAND.			
Albani Mountain Rose.....	250,000	1	05½
Consolidated Albani.....	500,000	1	19
Mineral Creek.....	500,000	1	05½
Mineral Hill.....	750,000	1	05
Quadra.....	500,000	1	10
CARIBOO.			
Cariboo Gold Fields Ltd.....	£100,000		
Cariboo Hydraulic Consolidated.....	\$5,000,000	1	85
Horsefly Hydraulic.....	200,000		
Horsefly Gold Mining Co.....	1,000,000	10	2 50
Cariboo M. & D. Co.....	300,000	1	25
Golden River Queanelle.....	\$250,000	£1	
Victoria Hydraulic.....	300,000	1	85
LILLOOET DISTRICT.			
Golden Cache.....	500,000	1	85
Alpha Bell.....	500,000	1	50
Cayoosh Creek Mines.....	500,000	1	50
Lillooet Gold Reefs.....	200,000	25	25
Excelsior.....	500,000	1	50
FAIRVIEW CAMP.			
Tin Horn.....	200,000	0 25	36
Winchester.....	250,000	0 25	25
BOUNDARY.			
Old Ironsides.....	1,000,000	1	13
Golden Crown.....	1,500,000	1	25
CAMP MCKINNEY.			
Cariboo†.....	800,000	1	55

† Dividends paid to date are as follows: Trail Creek District—Le Ro \$775,000; War Eagle (old company), \$217,000. Camp McKinney—Cariboo, \$189,000; Nelson District—Hall Mines, £26,750; Fern, \$10,000. Slocan District—Payne, about \$600,000; Slocan Star, \$400,000; Reco, \$287,000; Idaho, \$240,000; Whitewater, \$154,000; Rambler-Cariboo, \$40,000; Last Chance, \$40,000; Two Friends, \$6,000.
Dividends paid since last month's list was made up, Le Roi, \$50,000.

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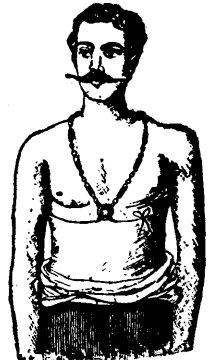
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B. C. Mining Record.

PROVINCE OF BRITISH COLUMBIA.

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The Mines of British Columbia Have Produced Over
\$100,000,000.

AMOUNT AND VALUE OF MATERIALS PRODUCED 1896 AND 1897.

Customary Measures.	1896.		1897.		
	Quantity.	Value.	Quantity.	Value.	
Gold Placer.....	Oz.....	27,201	\$ 544,026	25,676	\$ 513,520
“ Quartz.....	Oz.....	62,259	1,244,180	106,141	2,122,820
Silver.....	Oz.....	3,135,343	2,100,689	5,472,971	3,272,836
Copper.....	Lbs.....	3,818,556	190,926	5,325,180	266,258
Lead.....	Lbs.....	24,199,977	721,384	38,841,135	1,390,517
Coal.....	Tons.....	846,235	2,327,145	882,854	2,648,562
Coke.....	Tons.....	615	3,075	17,832	89,155
Other Materials.....			15,000		151,600
			\$7,146,425		\$10,455,268

Production for 1890, \$2,608,608 ; for 1896, \$7,146,425 ; for 1897, \$10,455,268.

GOLD.

Gold-bearing lodes are now being prospected in many parts of the province, and at Rossland magnificent ore-chutes of very profitable gold-copper ore are being mined and smelted, the Le Roi having paid to date \$725,000 in dividends, with a large and increasing amount of ore in sight as the workings attain greater depth, while systematic development on other properties is meeting with excellent results, mining having just fairly begun in this camp. Little doubt can be entertained that Rossland will become a heavy producer of gold, and that excellent properties now only await sufficient and abundant capital to become paying mines, to further aid in which the facilities for cheaper transportation and smelting are being now supplied. At Nelson and at Fairview, Camp McKinney, Greenwood, Central and other camps in the southern part of Yale, important work is being done on the quartz ledges there, several new mills being under erection.

Exploratory work has also been in progress in East Kootenay and in Lillooet, Alberni, and on the Gulf Islands and along the coast line of the Mainland, as well as in other parts of the province.

In Cariboo, several large undertakings, involving a large amount of capital, are at work exploring both modern and ancient river channels, the Cariboo Hydraulic Mining Co., on the Quesnelle River, proving, on development, to have in a channel of the latter kind, a great deposit of exceptional richness, while other parts of this district now offer every inducement to capital.

Into Cassiar, Omineca, and the great area to the north, as well as Cariboo, there now promises to be a great exodus of explorers, excited by rich diggings now being mined in the Yukon as on the Klondyke, to the north, and rivers and creeks long reported to be gold-bearing will now be made accessible, and well tested.

SILVER-LEAD.

Despite the drop in the price of silver, the Slocan mines are being much more extensively worked, while the shipments of high grade ore are constantly increasing. The production for 1897 has much exceeded that of 1896, as such mines as the Payne, Ruth, Whitewater and other mines increased their output.

At Nelson, the Silver King or Hall Mines are shipping constantly a large amount of silver-copper ore, and the Lardeau, Trout Lake, Illecillewaet districts, on further exploration, promise to become rich. In East Kootenay large bodies of silver-lead ore will be mined on completion of the railroads now under construction.

COPPER.

Copper is being produced to a limited extent at Rossland and Nelson, but the large deposits of at present low grade ore in the Boundary Creek district will be fully tested when the rail-road, now almost assured, is constructed. Prospecting is being done at Kamloops, along the west coast of the Mainland and of Vancouver Island, as well as at many other points, and Texada is producing high grade bornite ore.

COAL AND COKE.

The large collieries on Vancouver Island are producing about a million tons of coal annually, and at Comox an excellent coke is now being produced, much of which is shipped to the inland smelters. The great deposits of coking coal in East Kootenay, at the Crow's Nest Pass, are now being opened, as the C.P.R. is now being built to the Columbia River to supply the great mining regions with cheap coal and coke.

SMELTERS AND RAILROADS.

The smelting industry is now beginning to assume large proportions, as preparations are being made to treat the ores of this Province within her own borders, a most important factor in the increasing prosperity of this country, entailing as it does, and will, the employment of much capital and many men. The extension of the railroad systems to different parts is now in progress, and the next few years will see many parts in which the prospects for good mining are excellent, made easy of access, while ores can be shipped with facility to the smelting centres, where the assembling of the various inter-fluxing ores will make possible the treatment of all British Columbia ores at home.

CAPITAL.

Capital can now find here excellent and many opportunities for investment, if proper business care and the experience of qualified men are utilized, as the values placed on mines and undeveloped properties have reached a reasonable basis.

MINERAL LANDS.

Mineral lands are open to location to any person over eighteen years of age, who has obtained a free miner's certificate, and perfect title to lode claims can be easily secured after \$500 worth of work has been done per claim. A great extent of territory has yet to be prospected.

YUKON GOLD FIELDS.

As the Klondyke and other gold fields in the Yukon in British territory are reached mostly via British Columbia, all supplies and outfits obtained at Victoria, Vancouver, Ashcroft, Kamloops, etc., can be taken in free of duty, which otherwise will have to be paid if not purchased in Canada.

For information, Reports, Bulletins, etc., address

R. G. McCONNELL, The HON. JAMES BAKER,
 Department of Mines, Minister of Mines,
 VICTORIA, B. C. VICTORIA, B. C.

TRANSPORTATION COMPANIES.

Canadian Pacific Navigation Co., Ltd.

TIME TABLE NO. 33.

(Taking effect March 1st, 1898.)

VANCOUVER ROUTE.

VICTORIA TO VANCOUVER daily except Monday at 1 o'clock.
VANCOUVER TO VICTORIA daily except Monday at 13 o'clock or on arrival C.P. Railway No. 1 Train.

NEW WESTMINSTER ROUTE.

LEAVE VICTORIA—For New Westminster, Ladner's Landing and Lulu Island Sunday at 23 o'clock; Wednesday and Friday at 7 o'clock. Sunday's steamer to New Westminster connects with C.P.R. Train No. 2 going east, Monday.

FOR PLUMPER PASS—Wednesdays and Fridays at 7 o'clock.
FOR MORESBY AND PENDER ISLANDS—Fridays at 7 o'clock.

LEAVE NEW WESTMINSTER—For Victoria Monday at 13:15 o'clock. Thursday and Saturday at 7 o'clock.

FOR PLUMPER PASS—Saturday at 7 o'clock.
FOR PENDER AND MORESBY ISLANDS—Thursday at 7 o'clock.

FRASER RIVER ROUTE.

Steamer leaves NEW WESTMINSTER for CHILLIWACK and way landings every Tuesday, Thursday and Saturday at 8 o'clock during river navigation.

NORTHERN ROUTE.

Steamships of this Company leave Victoria for Fort Simpson via Vancouver and intermediate ports on the First and Fifteenth of each month, and for Queen Charlotte Islands on the first of each month.

KLONDIKE ROUTE.

Steamers of this Company leave weekly for Wrangel, Juneau, Skagway and Dyea.

BARCLAY SOUND ROUTE.

Steamer "Willapa" leaves Victoria for Alberni and Sound ports the 10th and 20th of each month, and for Quatsino and Cape Scott on 30th. The Company reserve the right of changing this Time Table at any time without notification.

G. A. CARLETON,
General Agent.

JOHN IRVING,
Manager.

Kaslo & Slocan Railway.

TIME CARD.

Subject to change without notice.		Trains run on Pacific standard time	
Going west.		Going east.	
Leave 8.00 a.m.	Kaslo	Arrive 3.50 p.m.	
" 8.36 "	South Fork	" 3.15 "	
" 9.36 "	Sproule's	" 2.15 "	
" 9.51 "	Whitewater	" 2.00 "	
" 10.03 "	Bear Lake	" 1.48 "	
" 10.18 "	McGuigan	" 1.33 "	
" 10.38 "	Cody Junction	" 1.12 "	
Arrive 10.50 "	Sandon	Leave 1.00 "	
CODY LINE.			
Leave 11.00 a.m.	Sandon	Arrive 11.45 a.m.	
Arrive 11.20 a.m.	Cody	Leave 11.25 a.m.	
ROBT. IRVING, G. F. & F. A.		GEO. F. COPELAND, Superintendent.	

Spokane Falls & Northern, Nelson and Fort Sheppard, Red Mountain Railways.

The only all-rail route without change of cars between Spokane, Rossland and Nelson; also between Nelson and Rossland.
DAILY EXCEPT SUNDAY.

Leave.	Arrive.
7:30 a.m.	Spokane.....7:00 p.m.
10:30 a.m.	Rossland.....3:25 p.m.
9:00 a.m.	Nelson.....5:20 p.m.

Close connections at Nelson with steamer for Kaslo and all Kootenay Lake points. Passengers for Kettle River and Boundary Creek connect at Marcus with stage daily.

BRITISH COLUMBIA SMELTING & REFINING CO.

BUYERS OF

GOLD, SILVER AND COPPER ORES.

Correspondence Solicited. Smelter & Offices, Trail, B.C.

JOHN O. NORBOM, Office— B.C. IRON WORKS
Consulting Mechanical Engineer.

Mining, Milling, Hoisting, Pumping, Hydraulic and Air Compressing Machinery. Power Generation and Transmission. Twelve years' experience in the United States of America.

P.O. Drawer 754.

Vancouver, B.C.

Furness & Parkinson,

MINING BROKERS,
AGENTS and CONVEYANCERS,
ARCHITECTS and CIVIL ENGINEERS

Properties examined and reports made.
First-class Banking and other references.



FAIRVIEW, B.C.

The Columbia & Kootenay Steam Navigation Co., Ltd.

TIME TABLE NO. 10.

In effect June 8th, 1896.

ARROWHEAD-TRAIL ROUTE, STEAMER "NAKUSP."

Mouth bound; read down.		North bound; read up	
Son. Wed. Fri.	7 p.m. De ARROWHEAD	Ar 11.30 a.m.	Wed. Fri. Sun
" " "	" 11 p.m. Ar NAKUSP	{ De 7.30 a.m.	" " "
" " "	" 12 m. De	{ Ar 6 a.m.	" " "
Tues. Thurs. Sat.	9 a.m. Ar ROBSON	{ De 8.30 p.m.	Tues. Thurs. Sat
" " "	" 12 noon De	{ Ar 8 p.m.	" " "
" " "	" 2 p.m. Ar TRAIL	De 4.30 p.m.	" " "

Connections at Arrowhead with C.P.R. to and from Revelstoke and all points east and west; at Nakusp with Nakusp & Slocan R. to and from Slocan points; at Robson with C. & K. R. to and from Nelson and Kootenay Lake points; at Trail with C. & W. R. to and from Rossland; at Trail with Str. "Trail" to and from Waneta, Northport and Spokane.

TRAIL-NORTHPORT ROUTE, STEAMER "TRAIL."

Daily except Sun.	8 a.m. De TRAIL	Ar 4.30 p.m.	Daily except Sun
" " "	9 a.m. Ar WANETA	De 3 p.m.	
" " "	10 a.m. Ar NORTHPORT	De 1 p.m.	

Connections at Northport with S.F. & N.R. to and from Spokane and way points; at Trail with C. & W. R. to and from Rossland, and with Str. "Nakusp" to and from Robson, Nakusp and Revelstoke.

KOOTENAY LAKE ROUTE, STEAMER "KOKANEE."

Daily except Sun.	4.00 p.m. De NELSON	Ar 9.30 a.m.	Daily except Sun.
" " "	8 p.m. Ar KASLO	De 5.30 a.m.	

Saturday, June 6th and every second Saturday following, steamer leaves Kaslo at 10 p.m. for Bonner's Ferry; returning leaves Bonner's Ferry Sun. at noon. Connections at Nelson with C. & K. R. to and from Robson, Trail, Rossland, Nakusp, Revelstoke and C.P.R. points; at Nelson with N. & F.S.R. to and from Spokane and way points; at Kaslo with K. & S. R. to and from Slocan points; at Bonner's Ferry with G.N.R.

The right is reserved to change this schedule at any time without notice. For tickets, rates, etc., apply at Company's office, Nelson.

T. ALLAN,
SECRETARY.

J. W. TROUP,
MANAGER, Nelson B.C.

INTERNATIONAL NAVIGATION & TRADING COMPANY LTD.

Steamers "International" and "Alberta" on Kootenay Lake and River.

TIME CARD IN EFFECT 1st OCTOBER, 1897.

Subject to Change without Notice.

Five-Mile Point Connection with all Passenger Trains of N. & F. S. R'y to and from Northport, Rossland and Spokane.
Tickets sold and Baggage Checked to all U.S. Points.

Leave Kaslo for Nelson and Way Points, daily except Sunday, 5.45 a.m.
Arrive Northport, 12:15 p.m.; Rossland, 3:40 p.m.; Spokane, 6 p.m.
Leave Nelson for Kaslo and Way Points, daily except Sunday, 4.45 p.m.
Leaving Spokane, 8 a.m.; Rossland, 10:30 a.m.; Northport, 1:50 p.m.

NEW SERVICE ON KOOTENAY LAKE.

Leave Nelson for Kaslo, etc.,	Tues., Wed., Thurs., Fri., Sat.	8:30 a.m.
Arrive Kaslo		12:30 p.m.
Leave Kaslo for Nelson, etc.,	Mon., Tues., Wed., Thurs., Fri.	4:00 p.m.
Arrive Nelson		8:00 p.m.

BONNER'S FERRY AND KOOTENAY RIVER SERVICE.

Leave Kaslo, Sat.	4 p.m.	Leave Bonner's Ferry, Sun.	1 p.m.
Arrive Boundary, Sun.	12 p.m.	Arrive Boundary, Sun.	5 p.m.
Arv Bonner's Ferry, Sun.	10:30 a.m.	" Kaslo, Sun.	10 p.m.

Close connection at Bonner's Ferry with trains East bound, leaving Spokane 7:40 a.m., and West bound, arriving Spokane 7 p.m.
*The Alberta awaits the arrival of the International before leaving for Bonner's Ferry.

GEORGE ALEXANDER,

Kaslo, B.C., 12th July, 1897.

General Manager.

Change in Time Card

After end of October, the SS. Alberta passenger service, leaving Nelson 8 a.m. and Kaslo 4 p.m. will be discontinued.